

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

**ORDER NO. R2-2002-0072
NPDES PERMIT NO. CA0004880**

WASTE DISCHARGE REQUIREMENTS FOR:

**MIRANT DELTA, LLC
PITTSBURG POWER PLANT
PITTSBURG, CONTRA COSTA COUNTY**

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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

ORDER NO. R2-2002-0072**NPDES PERMIT NO. CA0004880**

**REISSUING WASTE DISCHARGE REQUIREMENTS FOR:
MIRANT DELTA, LLC
PITTSBURG POWER PLANT
PITTSBURG, CONTRA COSTA COUNTY**

FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. **Discharger and Permit Application.** Mirant Delta LLC, (hereinafter called the Discharger or Mirant), has applied to the Board for reissuance of waste discharge requirements and a permit to discharge treated wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES; the Permit).

Facility Description

2. **Facility Location.** The Discharger owns and operates the Pittsburg Power Plant, located at 696 West 10th Street, Pittsburg, Contra Costa County, California. A location map of the facility is included as Attachment A of this Order.
3. **Generation Capacity.** The Discharger has a capacity to generate approximately 2,060 Megawatts (MW) from seven steam-electric generating units.
4. **Discharge Location – Suisun Bay.** The treated wastewater is discharged into Suisun Bay and one of its tributaries, Willow Creek. These are all waters of the State and United States. The wastewater is discharged through 11 shoreline outfalls. The Discharger has not requested dilution credits for any of its discharges. These discharge points are as follows:

Outfall Number	Discharge Description	Latitude	Longitude	Receiving Water
E-001	Once-Through Cooling Water Discharge (Units 1 through 6), Unit 7 Cooling Water Blow Down, and other low volume wastes	38°02'30"	121°53'30"	Suisun Bay
E-002	Yard Storm Drain (Discharge Eliminated)			
E-003	Stormwater runoff from yard drains in Fuel Oil Tanks 8 through 14 during peak storm flows	38°02'15"	121°54'00"	Willow Creek
E-004	Stormwater runoff from yard drains around Fuel Oil Tank 16 during peak storm flows	38°01'45"	121°54'00"	Willow Creek
E-005A	Stormwater runoff from yard drains near Cooling Water Intake	38°02'30"	121°53'30"	Suisun Bay
E-005B	Stormwater runoff from yard drains near Cooling Water Intake	38°02'30"	121°53'45"	Suisun Bay
E-006	Unit 7 Cooling Tower Blowdown alternate discharge location	38°02'15"	121°54'15"	Willow Creek

Outfall Number	Discharge Description	Latitude	Longitude	Receiving Water
E-007	Stormwater runoff from yard drains around area southwest of Warehouse and portions of the PG&E Switchyard	38°02'15"	121°54'00"	Willow Creek
E-008	Stormwater runoff from yard drains around area west of Warehouse	38°02'15"	121°54'00"	Willow Creek
E-009	Stormwater runoff from PG&E switchyard and adjacent Mirant property	38°02'15"	121°54'00"	Willow Creek
E-010	Stormwater runoff from entrance road area between Fuel Oil Tanks 14 and 15	38°02'00"	121°54'00"	Willow Creek
E-011	Stormwater runoff from Pump Station area near Fuel Oil Tank 16	38°02'00"	121°54'00"	Willow Creek

5. **Discharge Description and volume:** The Report of Waste Discharge describes the discharge as follows:

Outfall Number	Contributory Waste Stream	Treatment Description	Annual Average Flow (MGD)	Annual Maximum Flow (MGD)
E-001	Once-Through Cooling Water Discharge (Units 1-6)	Screening, Shock Chlorination (and Dechlorination, if required)	658	1,070
	A. Intake Screen Wash	Screening	0.15	7.27
	B. Water Pretreatment System	Sedimentation/ Microstraining	0.12	0.17
		Reverse Osmosis Building Drains	0.004	
	C. Reverse Osmosis Reject	Microstraining	0.28	0.360
	D. Boilers 1 through 6 Blowdown	Microstraining (filtration)	0.15	0.300
	E. Ion Exchange Regeneration Waste ¹	Neutralization	0.07	0.648
	F. Settling Pond Effluent from Fireside/Air Preheater Washes (Boilers 1 through 7)	PH Adjustment Sedimentation Filtration	0.0027	0.036
	G. Oil-Water Separator Effluent from yard and building stormwater runoff	Oil-Water Separation / Sedimentation	0.30	0.576
	H. Unit 7 Cooling Tower Blowdown	Chlorination / Anti-scalant	17	17.0
	I. Chemical Metal Cleaning Waste Pond Effluent (Boilers 1 through 7)	Sedimentation / Neutralization / Microstraining	0.0027	0.047
E-002	Yard Storm Drain (Discharge Eliminated)			

¹ A portable offsite regeneration system is planned to treat reclamation wastewater generated from the new process. Portable off-site regenerated mixed bed demineralizers are planned to polish the second pass permeate to boiler makeup water quality.

Outfall Number	Contributory Waste Stream	Treatment Description	Annual Average Flow (MGD)	Annual Maximum Flow (MGD)
E-003	Stormwater runoff from yard drains around Fuel Oil Tanks 8 through 14 during peak storm flows	Best Management Practices	0.048	--
E-004	Stormwater runoff from yard drains around Fuel Oil Tank 16 during peak storm flows	Best Management Practices	0.005	--
E-005	Stormwater runoff from yard drains near Cooling Water Intake	Best Management Practices	0.0002	--
E-006	Unit 7 Cooling Tower Blowdown Alternate Discharge Location	Chlorination/ Anti-scalant	No Estimate	--
E-007	Stormwater runoff from yard drains in area southwest of Warehouse	Best Management Practices	No Estimate	--
E-008	Stormwater runoff from yard drains in area west of Warehouse	Best Management Practices	No Estimate	--
E-009	Stormwater runoff from PG&E Switchyard and the adjacent Mirant property	Best Management Practices	No Estimate	--
E-010	Stormwater runoff from entrance road area between Fuel Oil Tanks 14 and 15	Best Management Practices	No Estimate	--
E-011	Stormwater runoff from Pump Station area near Fuel Oil Tank 16	Best Management Practices	No Estimate	--

6. Waste Discharge Requirements Order No. 95-225, adopted by the Board on November 15, 1995, previously governed these discharges. Order No. 95-225 was administratively extended on June 21, 2000.
7. The U.S. Environmental Protection Agency (U.S. EPA) and the Board have classified this discharge as a major discharge.

Process Description

8. **Treatment Process.** The Discharger withdraws water from Suisun Bay via two shoreline intake structures, located approximately two thousand feet westerly of New York Point, to cool the condensers. Cooling water drawn from both intakes passes through separate bar racks and screens. A schematic water flow diagram is included as Attachment B of this Order.

9. **Condenser Design Specifications:**

Unit	Design Condenser Temperature Rise	Circulating Water Pump Design Capacity
1-4	15 °F	49,300 gallons per minute
5,6	18 °F	80,250 gallons per minute
7	Not Applicable	10,100 gallons per minute

Note: Each unit has two circulating water pumps with the exception of Unit 7. Unit 7 utilizes three lower-volume make-up pumps to replace water lost in the canal through evaporation.

10. **Discharge Process.** Outfall E-001 is discharged to Suisun Bay through a shoreline outfall. Outfall E-006 is an alternate discharge location to Willow Creek for Unit 7 Cooling Tower Blowdown

(normally discharged as E-001H). Outfalls E-003 through E-011, except E-006, are stormwater discharges.

Regional Monitoring Program

11. On April 15, 1992, the Board adopted Resolution No. 92-043 directing the Executive Officer to implement the Regional Monitoring Program (RMP) for the San Francisco Bay. Subsequent to a public hearing and various meetings, Board staff requested major permit holders in this region, under authority of Section 13267 of California Water Code, to report on the water quality of the estuary. These permit holders, including the Discharger, responded to this request by participating in a collaborative effort, through the San Francisco Estuary Institute (formerly the Aquatic Habitat Institute). This effort has come to be known as the San Francisco Bay Regional Monitoring Program for Trace Substances. This Order specifies that the Discharger shall continue to participate in the RMP, which involves collection of data on pollutants and toxicity in water, sediment and biota of the estuary. Annual reports from the RMP are referenced elsewhere in this Order.

Applicable Plans, Policies and Regulations

Basin Plan

12. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board (SWRCB) and the Office of Administrative Law on July 20, 1995 and November 13, 1995, respectively. A summary of the regulatory provisions is contained in Title 23 of the California Code of Regulations, Section 3912. The Basin Plan identifies beneficial uses and water quality objectives for waters of the state in the Region, including surface waters and groundwaters. The Basin Plan also identifies discharge prohibitions intended to protect beneficial uses. This Order implements the plans, policies and provisions of the Board's Basin Plan.

Beneficial Uses

13. The beneficial uses for Suisun Bay and its tributaries, as identified in the Basin Plan and based on known uses of the receiving waters in the vicinity of the discharge, are:

- Ocean, Commercial, and Sport Fishing
- Estuarine Habitat
- Industrial Service Supply
- Fish Migration
- Navigation
- Preservation of Rare and Endangered Species
- Water Contact Recreation
- Noncontact Water Recreation
- Fish Spawning
- Wildlife Habitat

State Implementation Policy (SIP)

14. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also known as the State Implementation Policy or SIP) on March 2, 2000 and the Office of Administrative Law (OAL) approved the SIP on April 28, 2000. The SIP applies to discharges of toxic pollutants in the inland surface waters, enclosed bays and estuaries of California subject to regulation under the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code) and the federal Clean Water Act. The SIP establishes implementation provisions for priority pollutant criteria promulgated by the U.S. EPA through the

National Toxics Rule (NTR) and California Toxics Rule (CTR), and for priority pollutant objectives established by the Regional Water Quality Control Boards (RWQCBs) in their water quality control plans (basin plans). The SIP also establishes monitoring requirements for 2,3,7,8-TCDD equivalents, chronic toxicity control provisions, and Pollutant Minimization Program. The SIP does not apply to the stormwater discharges E-003 through E-005 and E-007 through E-011.

California Toxics Rule (CTR)

15. On May 18, 2000, the U.S. EPA published the *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (Federal Register, Volume 65, Number 97, 18 May 2000). These standards are generally referred to as the California Toxics Rule (CTR). The CTR specified water quality standards for numerous pollutants that apply to the receiving waters of the Discharger.

State Thermal Plan and Clean Water Act Section 316(a)

16. On September 18, 1975, the State Board adopted the *Water Quality Control Plan for Control of Temperature in the Coastal Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan). The Thermal Plan contains objectives governing cooling water discharges. The Thermal Plan provides different and specific numeric and narrative water quality objectives for "new" and "existing" discharges of heat. The Thermal Plan applies to discharges E-001 and E-006.
17. Discharges from Pittsburg Power Plant are considered existing discharges within the meaning of the Thermal Plan. The Thermal Plan requires the following for existing thermal waste discharges:
- a. The maximum temperature of the thermal waste shall not exceed the natural receiving water temperature by more than 20°F.
 - b. Thermal waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.
 - c. No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.
 - d. The maximum temperature of thermal waste discharges shall not exceed 86°F.
18. The Thermal Plan provides that with the concurrence from the State Board, Regional Boards may grant exceptions to the Specific Water Quality Objectives of the Thermal Plan in accordance with Clean Water Act Section 316(a) (33 U.S.C. Section 1326) and applicable federal regulations. The Discharger has requested that the Board consider and grant an exception to the requirements listed in Findings 17.a, 17.c, and 17.d for discharge E-001.
19. Clean Water Act Section 316(a) provides that an exception will be granted if the Discharger can demonstrate, to the satisfaction of the Board, that an effluent limitation for heat is more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made. If the exception is granted, the Board will adopt an alternative effluent limitation, taking into account the interaction of the heat component of the discharge with other pollutants, that will protect the receiving water.
20. Title 40, Code of Federal Regulations, Section 125.73(a) addresses the implementation of Clean Water Act Section 316(a) exception. It states that "*Thermal discharge effluent limitations or standards established in permits may be less stringent than those required by applicable standards and limitations if the discharger demonstrates to the satisfaction of the director that such effluent limitations are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. This demonstration must show that the alternative effluent limitation desired by*

the discharger, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made."

21. Pittsburg Power Plant Units 1 through 4 have been in operation since 1954. Units 5 and 6 came online in 1960 and 1961, respectively. Unit 7 came online in 1972. The Pittsburg Power Plant has been in operation in its current facility design and discharge configuration since 1972. Since 1977, the Pittsburg Power Plant has been granted Thermal Plan exemptions with the following alternative effluent and receiving water limits:
 - The maximum temperature of the discharge at flood tide shall not exceed the natural receiving water temperature by more than 28 °F (15.6°C); and
 - The discharge of E-001 shall not cause more than 125 acres of surface water to rise to a temperature greater than 4°F above the natural temperature of the receiving water.
22. Pacific Gas and Electric Company (PG&E), the former owner and operator of the Pittsburg Power Plant requested an exception to the Thermal Plan and submitted reports in 1976, 1977, and 1992 to comply with Section 316(a) of the Clean Water Act. The purpose of these studies are to assess the thermal effects of the discharge on the beneficial uses of the receiving water. These assessments include field studies of the health, behavior and propagation patterns of affected fish and macroinvertebrate species, both in the discharge and at a reference site. The study site conditions include all environmental stressors that might be present at the reference site plus elevated temperature. Because the species studied in the discharge plume are exposed to the thermal stressors and all other existing environmental stressors in the discharge, the Thermal Effects studies considered cumulative impacts of both thermal and other stressors on the affected species. The studies showed that the discharge had no adverse impact or appreciable harm on any of the anadromous fish or other aquatic species inhabiting the area and that beneficial uses were protected. The California Department of Fish and Game (CDFG) and the National Marine Fisheries Service (NMFS) concurred with these conclusions in letters sent to the Executive Officer.
23. There has been no significant changes in Pittsburg Power Plant's power generation process and operation procedures in the last ten years. In addition, based on data gathered at RMP stations near the discharge and influent sampling data, the quality of the receiving water has not change considerably. Therefore, the findings and conclusions of the Thermal Effect Study is still applicable to the discharge.
24. Based on the studies referenced above, the lack of changed circumstances, and the fact that the Pittsburg Power Plant has discharged into Suisun Bay for the past 10 years with no adverse impact or appreciable harm on any of the anadromous fish or other aquatic species inhabiting the area, the Board concludes that selected effluent limitations in the Thermal Plan are more stringent than necessary to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on Suisun Bay. Therefore, the Board grants an exception to discharge E-001 under Section 316(a) of the Clean Water Act from the following three effluent limitations as specified in the Thermal Plan:
 - *"No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving water at any time or place."*
 - *"The maximum discharge temperature shall not exceed the natural receiving water temperature by more than 20°F."*

- *"The maximum temperature of thermal waste discharges shall not exceed 86°F."*

Prior to becoming effective, exemptions and alternatives to the above referenced requirements of the Thermal Plan must receive the concurrence of the State Board.

Clean Water Act Section 316(b) - Entrainment

25. Section 316(b) of the Clean Water Act 933 U.S.C Section 1326(b)) requires that the location, design, construction, and capacity of cooling water intake structures reflect Best Technology Available (hereafter BTA) for minimizing adverse environmental impacts.
26. The impact of the Discharger's intake cooling water system is a function of the number of organisms entrained (drawn into the cooling water system) and impinged (drawn against the intake screens).
27. The cooling water system intakes for Pittsburg Power Plant are in the nursery area for striped bass, which has been the principal organism of concern. However, recent listings of Delta smelt, Sacramento River winter-run Chinook Salmon, Central Valley spring-run Evolutionary Significant Unit (ESU) Chinook Salmon, Central Valley ESU Steelhead, and the Sacramento Splittail under the state and federal Endangered Species Act (ESA) have resulted in more attention being focused on these species. Young striped bass and other fish and invertebrates are entrained in the cooling system and are subjected to mechanical and thermal stress. Most of the Striped Bass losses occur in approximately a 75-day period between May and mid-July called the entrainment period.
28. In June 1986, the Board adopted Order No. 86-47. In that Order, the Board agreed to PG&E's proposed means of meeting the BTA requirements for intake structures. As described in that Order, PG&E implemented a Resources Management Program, improved intake structures, and stocked hatchery bass in the Delta. BTA for subsequent NPDES permits for the Pittsburg Power Plant continued to include the maintenance of intake structures, and the implementation of Resources Management Program and fish replacement program. The present Permit continues to define BTA as maintaining intake structures and implementing the Resources Management Program (Attachment F).
29. In a report dated January 1, 1992, PG&E summarized the result of a re-evaluation of intake screen technology. This study was conducted to fulfill CWA Section 316(b) requirements. The study showed that there have been no technological improvements that could be applied to the cooling water system that would achieve substantial reductions in fish losses beyond those already achieved by the present BTA program. This study re-evaluation was conducted in consultation with CDFG, U.S. Fish and Wildlife Service (USFWS), and NMFS.
30. Because of the potential to take Delta smelt, Winter-run Chinook salmon and other aquatic species, Mirant submitted applications for incidental take permits to the USFWS and NMFS for species under their jurisdiction. In addition, PG&E applied for and received incidental take coverage from CDFG, in the form of a Memorandum of Understanding, for purposes of species potentially subject to take under the California ESA. The incidental take authorizations will be administered by these agencies under the federal and state ESAs and are not included in this Order.
31. Mirant is currently developing, in cooperation and consultation with USFWS, NMFS, and CDFG, a comprehensive and integrated Conservation Program for the Pittsburg and Contra Costa Power Plants (collectively, the "Plants") intended to conserve certain fish and wildlife and minimize, to the maximum extent practicable, the impact of the operation of the Plants on certain species of fish and wildlife. The Conservation Program involves:

- (a) The proposed deployment, operation, maintenance, repair, and evaluation of an Aquatic Filter Barrier (AFB). The AFB will first be tested at the Contra Costa Power Plant. The AFB will only be deployed at the Pittsburg Power Plant, if the test is successful at the Contra Costa Power Plant.
- (b) The use of Variable Speed Drive (VSD) Program (20% reduction in circulating water intake and discharge based on design values on a 7-day running average) at the Pittsburg Power Plant during the February through July period when larval fishes are typically abundant in the Delta. In addition, the VSD Program will also be used as a backup at the Contra Costa Power Plant while the AFB is evaluated; and
- (c) The conservation, protection, and enhancement of aquatic and terrestrial habitat at the Montezuma Enhancement Site, located on the north shore of Suisun Bay about 1 mile east of Collinsville and roughly equidistant from the Plants.

Several other conservation measures would also be implemented. The Conservation Program is described in a draft Multi-species Conservation Plan (CP) developed under Section 10 of the ESA. The CP also evaluated several alternatives to minimize the impacts of the operation of the Plants on fish and wildlife and the preferred alternative (i.e., BTA) was continued operation of once-through cooling systems with the implementation of the Conservation Program. USFWS and NMFS requested the Discharger expedite the implementation of the Conservation Program by submitting applications necessary for its implementation with the U.S. Army Corps of Engineers (the "Corps"). Mirant has applied and USFWS and NMFS are currently conducting ESA Section 7 consultations with the Corps that would, in effect implement the Conservation Program. The Section 7 consultation is expected to result in the issuance of incidental take statements that will provide take authorization for the operation of the Plants and the implementation of the Conservation Program. Mirant's CP notes that if the AFB technology performs as expected, entrainment of larval and juvenile fish may be reduced by as much as 80 to 99%. Mirant is also applying to CDFG to implement the Conservation Program under incidental take authorization as provided by the California ESA. Once approved, this authorization would replace Mirant's current incidental take authorization provided by a Memorandum of Understanding with CDFG.

- 32. Based on the above-referenced CWA 316(b) study, the existing intake structure is the best intake technology available. However, in view of the consultation process and the status of Mirant's CP, the BTA may change based on the outcome of the consultation process and implementation of Mirant's Conservation Program. Unless the AFB is determined ineffective at the Contra Costa Power Plant, it will be subsequently deployed, operated, maintained, repaired, monitored, and evaluated at the Pittsburg Power Plant. The VSD program with attendant reduced flows or compensatory mitigation will be implemented at the Pittsburg Power Plant until the AFB is deployed and operated. BTA will, in such event, be represented by the Conservation Program endorsed by USFWS and NMFS through the ESA Section 7 consultation process. This BTA will replace the Resources Management Program currently set forth in Attachment F, which is the current BTA.
- 33. This Order includes a Provision requiring the Discharger to implement the Conservation Program when it is developed by the ESA consultation process. If the cost of implementing any alternative for achieving BTA is wholly disproportionate to the environmental benefits to be achieved, the Board may consider alternative methods to mitigate these adverse environmental impacts.
- 34. Since the intake structure may be changed and its effect on entrainment and impingement will be different from that of the 1992 study, this Order contains a provision requiring the Discharger to conduct a new 316(b) study after the implementation and reliable operation of the new intake technologies.

35. If the ESA consultation process determines that the CP should be implemented, then these new BTAs are available and Discharger is required to implement them. If the cost of implementing any alternative for achieving BTA is wholly disproportionate to the environmental benefits to be achieved, the Board may consider alternative methods to mitigate these adverse environmental impacts.

Other Regulatory Bases

36. In addition to the applicable plans, policies, and regulations cited above, the requirements in this permit are based on; *Quality Criteria for Water* (EPA 440/5-86-001, 1986 and subsequent amendments, "U.S. EPA Gold Book"); applicable Federal Regulations (40 CFR Parts 122, 131 and 423); the National Toxics Rule (57 FR 60848, 22 December 1992 and 40 CFR Part 131.36(b), "NTR"); NTR Amendment (Federal Register Volume 60, Number 86, 4 May 1995, pages 22229-22237); U.S. EPA December 10, 1998 "National Recommended Water Quality Criteria" compilation (Federal Register Vol. 63, No. 237, pp. 68354-68364); and Best Professional Judgment (BPJ) as defined in the Basin Plan. Where numeric effluent limitations have not been established or updated in the Basin Plan, 40 CFR 122.44(d) specifies that water quality based effluent limits may be set based on U.S. EPA criteria and supplemented where necessary by other relevant information to attain and maintain narrative water quality criteria to fully protect designated beneficial uses. Discussion of the specific bases and rationale for effluent limits are given in the attached Fact Sheet for this Order, which is incorporated as part of this Order.
37. In addition to the documents listed above, other U.S. EPA guidance documents upon which BPJ was developed may include in part:
- Region 9 Guidance For NPDES Permit Issuance, February 1994;
 - U.S. EPA Technical Support Document for Water Quality Based Toxics Control (March 1991) (TSD);
 - Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993;
 - Whole Effluent Toxicity (WET) Control Policy, July 1994;
 - National Policy Regarding Whole Effluent Toxicity Enforcement, August 14, 1995;
 - Clarifications Regarding Flexibility in 40 CFR Part 136 Whole Effluent Toxicity (WET) Test Methods, April 10, 1996;
 - Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Programs Final, May 31, 1996;
 - Draft Whole Effluent Toxicity (WET) Implementation Strategy, February 19, 1997.

Basis for Effluent Limitations

General Basis

38. **Federal Water Pollution Control Act.** Effluent limitations and toxic effluent standards are established pursuant to sections 301 through 305, 307 and 316 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharges herein.

Applicable Water Quality Objectives

39. The water quality objectives (WQO) applicable to the receiving water of this Discharger are from the Basin Plan, the CTR, and the NTR.
- a. The Basin Plan specifies numeric WQOs for 10 priority toxic pollutants, as well as narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The pollutants for

which the Basin Plan specifies numeric objectives are arsenic, cadmium, chromium (VI), copper in freshwater, lead, mercury, nickel, silver, zinc, and cyanide (see also c. below). The narrative toxicity objective states in part “[a]ll waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms.” The bioaccumulation objective states in part “[c]ontrollable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life.” Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.

- b. The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries such as Suisun Bay, except that where the Basin Plan’s Tables 3-3 and 3-4 specify numeric objectives for certain priority toxic pollutants, the Basin Plan’s numeric objectives apply over the CTR (except in the South Bay south of the Dumbarton Bridge).
- c. The NTR established numeric aquatic life criteria for selenium, and numeric aquatic life and human health criteria for cyanide for waters of San Francisco Bay upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta. This includes the receiving water for this Discharger.

Basin Plan Receiving Water Salinity Policy

- 40. The Basin Plan states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable water quality objectives. Freshwater objectives apply to discharges to waters both outside the zone of tidal influence and with salinities lower than 5 parts per thousand (ppt) at least 75 percent of the time. Saltwater objectives shall apply to discharges to waters with salinities greater than 5 ppt at least 75 percent of the time. For discharges to waters with salinities in between the two categories or tidally-influenced freshwaters that support estuarine beneficial uses, the objectives shall be the lower of the salt or freshwater objectives, based on ambient hardness, for each substance.

CTR Receiving Water Salinity Policy

- 41. The CTR states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable water quality criteria. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than one ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the criteria shall be the lower of the salt or freshwater criteria, (the latter calculated based on ambient hardness), for each substance.

Receiving Water Salinity and Hardness

- 42. a. Salinity

The receiving waters for the subject discharge are the waters of Suisun Bay. Salinity data indicate that the receiving waters for the subject discharge are estuarine according to both the CTR and Basin Plan definitions. Therefore, this Order’s effluent limitations are based on the lower of the freshwater and marine water quality objectives or criteria (WQO/WQC).

- b. Hardness

Some WQOs are hardness dependent. Hardness data collected through the RMP are available for water bodies in the San Francisco Bay Region. In determining the WQOs for this Order, the Board used a hardness of 52mg/L, which is the minimum hardness at the Honker Bay Station

observed during 1993-2000. This is the closest station to the discharge and represents the best available information for hardness of the receiving water after it has mixed with the discharge.

Technology Based Effluent Limits

43. Permit effluent limits for E-001B, 001C, 001D, 001E, 001F, 001H, 001I, and E-006 are technology based and promulgated in 40 CFR 423. Limits in this Permit are the same as in the prior Permit for the following constituents: Total Suspended Solids (TSS), oil and grease, chromium, zinc, copper, iron, and chlorine residual.

Water Quality Based Effluent Limitations

44. Toxic substances are regulated by water quality based effluent limitations (WQBELs) for effluent E-001 and E-006 derived from the objectives listed in the Basin Plan Tables 3-3 and 3-4, the National Toxics Rule, or U.S. EPA Gold Book, the CTR, the SIP, and/or BPJ. WQBELs in this Order are revised and updated from the limits in the previous permit order and their presence in this Order is based on the evaluation of the Discharger's data as described below under the Reasonable Potential Analysis. Numeric WQBELs are required for all constituents that have reasonable potential to cause or contribute to an excursion above any State water quality standard. Reasonable potential is determined and final WQBELs are developed using the methodology outlined in the SIP.

Intake Credits

45. Discharger appears to be a likely candidate for intake credits pursuant to Section 1.4.4 of the SIP. However, Discharger has submitted a report, Analysis and NPDES Data for Proposed WQBELs (May 13, 2002), concluding that the available data do not adequately represent the once-through cooling-water system, and the Regional Board is unable to apply intake credits at this time. Therefore, determination of intake credits, if appropriate, is deferred until a later permit cycle and this Permit contains interim limits based on current performance.

Receiving Water Ambient Background Data used in Calculating WQBELs

46. Ambient background values are utilized in the reasonable potential analysis (RPA) and in the calculation of effluent limitations for E-001 and E-006. For the RPA, ambient background concentrations are the observed maximum water column concentrations. The SIP states that for calculating WQBELs, ambient background concentrations are either the observed maximum ambient water column concentrations, or, for criteria/objectives intended to protect human health from carcinogenic effects, the arithmetic mean of observed ambient water concentrations. The receiving waters for the discharge are estuarine and subject to complex tidal and river currents. Data from the Sacramento River Station was chosen to represent ambient background because it is sufficiently upstream of the discharge to be unaffected by the discharge. WQBELs were calculated using RMP data from 1993 through 2000 from the Sacramento River Station. Board staff used the RMP data set from 1993 through 2000 to determine the following total recoverable metals ambient background concentrations listed in Table 1, below. Not all the constituents listed in the CTR have been analyzed by the RMP at this time. This data gap is addressed by the Board's August 6, 2001 letter formally requiring (pursuant to Section 13267 of the California Water Code) the Discharger to conduct ambient background monitoring for those constituents not currently sampled by the RMP and to provide this technical information to the Board (the Board's August 6, 2001 letter). Upon completion of the required ambient background monitoring, the Board shall use the gathered data to conduct the RPA and determine if a water-quality based effluent limitation is required.

Constituents Identified in the 303(d) List

47. On May 12, 1999, the U.S. EPA approved a revised list of impaired waterbodies prepared by the State. The list (hereinafter referred to as the 303(d) list) was prepared in accordance with Section 303(d) of the federal Clean Water Act to identify specific water bodies where water quality standards

are not expected to be met after implementation of technology-based effluent limitations on point sources. Suisun Bay is listed as an impaired water body. The pollutants impairing Suisun Bay include chlordane, copper, DDT, diazinon, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, nickel, PCBs (including dioxin-like PCBs), and selenium.

Dilution and Assimilative Capacity

48. In response to the State Board's Order No. WQ 2001-06, staff has evaluated the assimilative capacity of the receiving water for 303(d) listed pollutants for which the Discharger has reasonable potential. The evaluation included a review of RMP data (local and Sacramento River stations), effluent data, and WQOs. From this evaluation, staff has found that the assimilative capacity is highly variable due to the complex hydrology of the receiving water. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data to conclusively quantify the assimilative capacity of the receiving water. Pursuant to Section 1.4.2.1 of the SIP, "dilution credit may be limited or denied on pollutant-by-pollutant basis..." For bioaccumulative pollutants, based on best professional judgment, dilution credit is not included in calculating the final WQBELs. Furthermore, Section 2.1.1 of the SIP states that for bioaccumulative compounds on the 303(d) list, the Board should consider whether mass loading limits should be limited to current levels. The Board finds that mass loading limits are warranted for the bioaccumulative compounds on the 303(d) list for the receiving waters of this discharge. However, the Basin Plan classifies this facility as a shallow water discharge, therefore, no dilution credit is granted to the discharger.

Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs)

49. Based on the 303(d) list of pollutants impairing Suisun Bay, the Board plans to adopt Total Maximum Daily Loads (TMDLs) for these pollutants no later than 2010, with the exception of dioxin and furan compounds. The Board defers development of the TMDL for dioxin and furan compounds to the U.S. EPA. Future review of the 303(d) list for Suisun Bay may result in revision of the schedules and/or provide schedules for other pollutants.
50. The TMDLs will establish waste load allocations (WLAs) and load allocations for point sources and non-point sources, respectively, and will result in achieving the water quality standards for the waterbody. The final effluent limitations for this discharge will be based on WLAs that are derived from the TMDLs.
51. The following summarizes the Board's strategy to collect water quality data and to develop TMDLs:
- a. Data collection – The Board has given the dischargers the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or water quality objectives. The Board will require dischargers to characterize the pollutant loads from their facilities into the water-quality limited waterbodies. The results will be used in the development of TMDLs, but may also be used to update/revise the 303(d) list and/or change the water quality objectives for the impaired waterbodies including Suisun Bay.
 - b. Funding mechanism – The Board has received, and anticipates continued receipt of, resources from federal and state agencies for the development of TMDLs. To ensure timely development of TMDLs, the Board intends to supplement these resources by allocating development costs among dischargers through the RMP or other appropriate funding mechanisms.

Interim Limits and Compliance Schedules

52. Until final WQBELs or WLAs are adopted, state and federal anti-backsliding and antidegradation policies, and the SIP, require that the Board include interim effluent limitations. The interim effluent limitations will be the lower of the following:

- current performance; or
- previous permit limit

This permit establishes interim performance-based mass limits in addition to interim concentration limits for E-001 to limit discharge of 303(d)-listed bioaccumulative pollutants' mass loads to their current levels. These interim performance-based mass limits are based on recent discharge data. Where pollutants have existing high detection limits, interim mass limits are not established for pollutants with multiple non-detects because meaningful performance-based mass limits cannot be calculated at the appropriate (99.87%) confidence level for pollutants with non-detectable concentrations. However, the Discharger has the option to investigate alternative analytical procedures that result in lower detection limits, either through participation in new RMP special studies or through equivalent studies conducted jointly with other Dischargers.

53. Compliance schedules are established based on Section 2.2 of the SIP for limits derived from CTR criteria or are based on the Basin Plan for limits derived from the Basin Plan WQOs. If an existing Discharger cannot immediately comply with a new and more stringent effluent limitation, the SIP and the Basin Plan authorize a compliance schedule in the permit. To qualify for a compliance schedule, both the SIP and the Basin Plan require that the Discharger demonstrate that it is infeasible to achieve immediate compliance with the new limit. The SIP and Basin Plan require that the following information be submitted to the Board to support a finding of infeasibility:
- i. documentation that diligent efforts have been made to quantify pollutant levels in the discharge and sources of the pollutant in the waste stream, including the results of those efforts;
 - ii. documentation of source control and/or pollution minimization efforts currently under way or completed;
 - iii. a proposed schedule for additional or future source control measures, pollutant minimization or waste treatment; and
 - iv. a demonstration that the proposed schedule is as short as practicable.
54. On May 20, 2002, the Discharger submitted a feasibility study, which demonstrated according to the Basin Plan (page 4-14, Compliance Schedule) or SIP (Section 2.1, Compliance Schedule), it is infeasible to immediately comply with the WQBELs calculated according to Section 1.4 of the SIP. Therefore, this permit establishes a five-year compliance schedule for final limits based on CTR or NTR criteria (e.g., copper and selenium), a compliance schedule of March 31, 2010, for final limits based on the Basin Plan numeric objectives (e.g., mercury) except for dioxin. These compliance schedules both exceed the length of the permit, therefore, these calculated final limits are intended as points of reference for the feasibility demonstration and are only included in the findings by reference to the fact sheet. Additionally, the final WQBELs for copper, and mercury will very likely be based on either the Site Specific Objective (SSO) or TMDL/WLA as described in other findings specific to each of the pollutants.
55. During the compliance schedules, interim limits are included based on current treatment facility performance or on existing permit limits, whichever is more stringent to maintain existing water quality. In the event that no performance based interim limit can be calculated at the 99.87 % confidence level, interim limit is based on the maximum observed effluent concentrations. The Board may take appropriate enforcement actions if interim limits and requirements are not met.

Antibacksliding and Antidegradation

56. The interim limits in this permit are in compliance with antidegradation and antibacksliding because
- (1) the interim limits hold the Discharger to current facility performance or current limitations; and
 - (2) because the final limit is in compliance with anti-backsliding requirements.

Specific Basis***Reasonable Potential Analysis***

57. As specified in 40 CFR 122.44(d) (1) (i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard." Using the method prescribed in Section 1.3 of the SIP, Board staff has analyzed the effluent data to determine if the discharges, which are the subject of this Permit and Order, have a reasonable potential to cause or contribute to an excursion above a State water quality standard ("Reasonable Potential Analysis" or "RPA"). For all parameters that have reasonable potential, numeric water quality-based effluent limitations (WQBELs) are required. The RPA compares the effluent data with numeric and narrative WQOs in the Basin Plan and numeric WQC from the U.S. EPA Gold Book, the NTR, and the CTR.

58. ***Reasonable Potential Methodology.*** The method for determining RPA involves identifying the observed maximum pollutant concentration in the effluent (MEC) for each constituent, based on effluent concentration data. The RPA for all constituents is based on zero dilution, according to section 1.3 of the SIP. There are three triggers in determining reasonable potential.

- a. The first trigger is activated when the maximum effluent concentration (MEC) is greater than the lowest applicable water quality objective (WQO), which has been adjusted for pH, hardness (H= 52 mg/L), and translator data, if appropriate. An MEC that is greater than the (adjusted) WQO means that there is reasonable potential for that constituent to cause or contribute to an excursion above the WQO and a water quality based effluent limitation (WQBEL) is required. (Is the MEC>WQO?)
- b. The second trigger is activated if the observed maximum ambient background concentration (B) is greater than the adjusted WQO and the MEC is less than the adjusted WQO or the pollutant was not detected in any of the effluent samples and all of the detection levels are greater than or equal to the adjusted WQO. If B is greater than the adjusted WQO, then a WQBEL is required. (Is B>WQO?)
- c. The third trigger is activated after a review of other information determines that a WQBEL is required even though both MEC and B are less than the WQO. A limit is only required under certain circumstances to protect beneficial uses.

59. ***Summary of RPA Data and Results.***

- For discharge E-001, Units 1 through 7 wastewaters, the RPA was based on discharge monitoring data from January 1999 through December 2001 for metals in E-001. There are no E-001 data available for organic toxic pollutants, selenium, and cyanide. Therefore, there are insufficient data to conduct RPA for organics, selenium, and cyanide for E-001.
- Discharges E-003 through E-011, except E-006, are stormwater discharges which are exempt from the requirements of the SIP.
- For discharge E-006, Unit 7 alternate discharge location, there are no monitoring data available. Therefore, there are insufficient data to conduct RPA.

Based on the RPA methodology described above and in the SIP, the following constituents have been found to have reasonable potential to cause or contribute to an excursion above water quality objectives: chromium, copper, lead, mercury, nickel, DDE and dieldrin. Based on the RPA, numeric water quality based effluent limits are required to be included in the permit for these constituents.

60. ***RPA Determinations.*** The maximum effluent concentrations (MEC), WQOs, bases for the WQOs, background concentrations used and reasonable potential conclusions from the RPA are listed in the

following table for all constituents analyzed. (Further details on the RPA can be found in the Fact Sheet.)

Constituent ¹	WQO (µg/L)	Basis ²	E-001 MEC (µg/L)	Maximum Ambient Background Conc. (µg/L)	Reasonable Potential
Arsenic	36	BP	6.4	3.4	No
Cadmium	0.7	BP, H=52 mg/L CaCO ₃	<0.02	0.05	No
Chromium	11	BP	14	-	Yes
Copper*	3.7	CTR, T=0.83	19	7.3	Yes
Lead	1.4	BP, H=52 mg/L CaCO ₃	2.7	2.43	Yes
Mercury*	0.025	BP	0.16	0.0219	Yes
Nickel*	7.1	BP	17	11.8	Yes
Silver	1.3	BP, H=52 mg/L CaCO ₃	0.033	0.019	No
Zinc	58	BP	23	16.5	No
DDE	0.0006	CTR	No data	0.0009	Yes
Dieldrin	0.00014	CTR	No data	0.0002	Yes
CTR Pollutant Nos. 10, 14, 16 ³ , and 17 to 126	Various	CTR and BP	No data	Various	Cannot Determine, No Data Available

1. *Constituents on 303(d) list.

2. BP = Basin Plan; CTR = California Toxics Rule; T = translator to convert dissolved to total copper, H = Hardness, the lowest value of from Honker Bay RMP station is used.

3. Although the CTR criterion for dioxin is for 2,3,7,8-TCDD only, the Board determines reasonable potential for Dioxin TEQ because of the U.S. EPA's listing of San Francisco Bay as impaired by these compounds. Dioxin TEQ includes all 17 dioxin and furan congeners of 2,3,7,8-TCDD using the 1998 World Health Organization factors.

61. *Effluent RP Monitoring.* This Order does not include effluent limitations for constituents that do not show a reasonable potential, but continued monitoring for them is required as described in the SMP and a separate letter dated August 6, 2001, from the Executive Officer. If concentrations of these constituents increase significantly the Discharger will be required to investigate the source of the increases and establish remedial measures if the increases result in a reasonable potential to cause or contribute to an excursion above the applicable water quality standard.

62. *Permit Reopener.* The Order includes a reopener provision to allow numeric effluent limitations to be added or deleted in the future for any constituent that exhibits or does not exhibit, respectively, reasonable potential. The Board will make this determination based on monitoring results.

Development of Effluent Limitations

Interim Limit with Compliance Schedules.

63. The Discharger has demonstrated infeasibility to meet the WQBELs calculated according to Section 1.4 of the SIP for chromium, copper, lead, mercury, and nickel, thereby complying with the infeasibility requirements in Section 2.1 of the SIP. This Order establishes compliance schedules for these pollutants that extend beyond one year. Pursuant to the SIP, and 40 CFR 122.47, the Board shall establish interim numeric limitations and interim requirements to control the pollutant. Except as authorized in the SIP and discussed elsewhere in this Order, this Order establishes interim limits

for these pollutants based on the previous permit limits or plant performance, whichever is more stringent. Specific basis for these interim limits are described in the following findings for each pollutant. This Order also establishes interim requirements in a provision for development and/or improvement of a Pollution Prevention Program to reduce pollutant loadings to the facility, and for submittal of annual reports on this Program. The Discharger has committed to support development of TMDLs for pollutants which its discharge may be contributing to the impairment.

Chromium

64. *Water Quality Objective.* The Basin Plan contains a numeric water quality objective for total chromium of 11 µg/L. No translator value is needed.
65. *Interim Effluent Limitation.* Due to the numbers of non-detects in the effluent monitoring data, an interim limit at the 99.87 percentile value cannot be calculated. Therefore, this Order established an interim monthly average limit of 14 µg/L for chromium based on the maximum effluent concentration from effluent data gathered from January 1999 through December 2001. The final effluent limit will be no net loading or WQBEL.
66. *Facility Performance and Compliance Attainability.* Effluent concentrations during the past three years (January 1999 – December 2001) range from 0.46 to 14 µg/L. The previous permit did not contain an effluent limitation for chromium.

Copper

67. *CTR Copper Water Quality Objectives.* Copper is listed on the 303(d) list as a pollutant that is impairing Suisun Bay. The saltwater objective for copper in the adopted CTR is 3.1 µg/L dissolved copper. Included in the CTR are translator values to convert the dissolved objectives to total objectives. The Discharger may perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 EPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion*, describe this process and provides guidance on how to establish a site-specific translator.
68. *Water Effects Ratios.* The CTR provides for adjusting the criteria by deriving site-specific objectives through application of the water-effect ratio (WER) procedure. The U.S. EPA includes WERs to assure that the metals criteria are appropriate for the chemical conditions under which they are applied. A WER accounts for differences between a metal's toxicity in laboratory dilution water and its toxicity in water at the site. The U.S. EPA's February 22, 1994 Interim Guidance on Determination and Use of Water Effects Ratios for Metals superseded all prior U.S. EPA guidance on this subject. If the Discharger decides to pursue SSOs, they shall be developed in accordance with procedures contained in Section 5.2 of the SIP.
69. *Interim Effluent Limitation.* This Order contains a copper effluent limit because the 1998 303(d) list includes Suisun Bay as impaired by copper, and because, based on the RPA, staff determined that there is reasonable potential for exceedances in the WQO for copper in the subject discharge. The final WQBEL for copper will be based on the SSO or WLA contained in a TMDL if one is completed. The SIP requires the interim numeric effluent limit for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. This Order establishes an interim monthly average copper limit of 20 µg/L based on performance.
70. The Discharger and other dischargers from north of the Dumbarton Bridge are currently conducting impairment assessment studies designed to collect additional data on copper in San Francisco Bay. The Regional Board will consider these studies in its 303(d) listing decision in 2002, and when

considering any SSO proposed for copper. The final WQBEL for copper will be based on the WLA contained in a TMDL if one is completed. Alternatively, the copper WQBEL may be developed consistent with SIP procedures in Section 5.2 if the impairment studies support adoption of an SSO. If the 303(d)-listing process in 2002 concludes a finding that the Bay is not impaired by copper, then a de-listing of Suisun Bay for copper will result. Existing RMP dissolved copper results show most of the Bay north of the Dumbarton Bridge complies with the CTR's 3.1 µg/L dissolved copper WQO.

71. *Facility Performance and Compliance Attainability.* Effluent concentrations during the past three years (January 1999 – December 2001) range from 3.7 to 19 µg/L. The previous permit did not contain an effluent limitation for copper.

Lead

72. *Water Quality Objective.* The Basin Plan contains a formula to calculate water quality objective for lead. Using hardness value of 52 mg/L CaCO₃ from the closest RMP station (Honker Bay) to the discharge, the calculated numeric water quality objective for lead is 1.4 µg/L.
73. *Interim Effluent Limitation.* The SIP requires the interim numeric effluent limit for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. This Order establishes an interim monthly average lead limit of 5.3 µg/L based on performance. The final effluent limit will be a WQBEL.
74. *Facility Performance and Compliance Attainability.* Effluent concentrations during the past three years (January 1999 – December 2001) range from 0.18 to 2.7 µg/L. The previous permit did not contain an effluent limitation for lead.

Mercury

75. *Mercury Water Quality Objectives.* Both the Basin Plan and CTR include objectives that govern mercury in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 0.025 µg/L as a 4-day average and 2.1 µg/L as a 1-hour average. The CTR specifies a long-term average criterion for protection of human health of 0.051 µg/L.
76. *Mercury TMDL.* The current 303(d) list includes Suisun Bay as impaired by mercury, due to exceedences in fish tissue levels. Methyl-mercury is a persistent bioaccumulative pollutant. The Regional Board intends to develop a TMDL that will reduce mercury mass loadings in the Suisun Bay. The final mercury effluent limitations will be based on the Discharger's WLA in the TMDL, and the permit will be revised to include the final WQBEL as an enforceable limitation.
77. *Mercury Control Strategy.* The Board, together with other stakeholders, will cooperatively develop source control strategies as part of TMDL development. Power plant discharge point sources may not be the most significant mercury loadings to the Estuary. Therefore, the currently preferred strategy is applying interim mass loading limits to point source discharges while focusing mass reduction efforts on other more significant and controllable sources. While the TMDL is being developed, the Discharger will cooperate by complying with no net loading mercury mass emission limits.
78. *Interim Concentration-Based Effluent Limitation.* Due to the numbers of non-detects in the effluent monitoring data, an interim limit at the 99.87 percentile value cannot be calculated. Therefore, this Order established an interim monthly average limit of 0.16 µg/L for mercury based on the maximum

effluent concentration from effluent data gathered from January 1999 through December 2001. The final effluent limit will be based on the TMDL.

79. *Interim mass-Based Mercury Effluent Limitation.* This Order establishes an interim mercury mass-based effluent limitation for Discharge E-001, based on treatment plant performance at the 99.87 percentile value (or average + 3* standard deviation) from effluent data gathered from January 1999 through December 2001. The total mass loadings were calculated using a 12-month moving average. This mass based effluent limitation maintains current loadings until a TMDL is established and is consistent with state and federal antidegradation and antibacksliding requirements. The final mass based effluent limitation will be based on the WLA derived from the mercury TMDL.
80. *Facility Performance and Compliance Attainability.* Effluent concentrations during the past three years (January 1999 – December 2001) range from <0.0001 to 0.16 µg/L. The previous permit did not contain an effluent limitation for mercury.

Nickel

81. *Water Quality Objective.* The Basin Plan contains a numeric water quality objective for total nickel of 7.1 µg/L. No translator value is needed.
82. *Interim Effluent Limitations.* Due to the numbers of non-detects in the effluent monitoring data, an interim limit at the 99.87 percentile value cannot be calculated. Therefore, this Order established an interim monthly average limit of 17 µg/L for nickel based on the maximum effluent concentration from effluent data gathered from January 1999 through December 2001. The final WQBEL may be revised based on TMDL/WLA or SSO and translator. The current 303(d) list includes Suisun Bay as impaired by nickel.
83. *Facility Performance and Compliance Attainability.* Effluent concentrations during the past three years (January 1999 – December 2001) range from 2.5 to 17 µg/L. The previous permit did not contain an effluent limitation for nickel.

Dieldrin and DDE

84. Dieldrin and DDE have been found to have reasonable potential due to their presence in background stations at levels exceeding water quality objectives. The background RMP data were not collected using U.S. EPA methods for dieldrin and DDE and no effluent data has been collected. This permit will require the Discharger to collect data and the permit may be reopened at a later date to establish limits for dieldrin and DDE.

Whole Effluent Acute Toxicity

85. This Order includes effluent limits for whole-effluent acute toxicity. Compliance evaluation is based on 96-hour static renewal bioassays. Static renewal bioassays are specified instead of flow through because of potential fluctuations in the salinity of the discharge resulting from tidal influence of the intake water. U.S. EPA promulgated updated test methods for acute and chronic toxicity bioassays on October 16, 1995, in 40 CFR Part 136. This Order requires the Discharger to use the new procedures as promulgated on October 16, 1995.

Whole Effluent Chronic Toxicity

86. This Order does not specify requirements for chronic toxicity because there is no reasonable potential for this discharge to contribute to chronic toxicity as determined by critical life stage toxicity tests. This is based on tests that show the presence of toxicity in the discharge similar to the levels observed in the ambient intake water. The Discharger conducted these tests as part of their participation in the

Board's Effluent Toxicity Characterization Program (ETCP) in the late 1980's. The discharger conducted a total of 18 discharge tests with four species, and 12 ambient water tests with 3 species.

Pollutant Minimization/Pollution Prevention

87. This order requires the Discharger to establish a Pollution Prevention Program under the requirements specified by the Board.
88. Board staff intends to require an objective third party to establish model programs, and to review program proposals and reports for adequacy. This is to encourage use of Pollution Prevention and does not abrogate the Board's responsibility for regulation and review of the Discharger's Pollution Prevention Program. Board staff will work with the Discharger to identify the appropriate third party for this effort.

Special Studies

Thermal Study

89. This Order contains a provision requiring the Discharger to verify dispersion of the thermal plume and the effects it has on the surrounding biota, after implementation and reliable operation of new intake technologies (described in the findings above), as part of the application for permit reissuance in 5 years.

Impingement and Entrainment Study

90. Since the Discharger is proposing to implement new intake technologies that may change entrainment and impingement effects of the intake, this Order contains a provision requiring the Discharger to conduct a new 316(b) study after implementation and reliable operation of the new technologies.

Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations

91. *Insufficient effluent and ambient background data.* Staff's review of the effluent and ambient background monitoring data found that there were insufficient data to determine reasonable potential and calculate numeric WQBELs for most pollutants listed in the CTR.
92. *SIP- Required Dioxin study.* The SIP states that each Board shall require major and minor POTWs and industrial Dischargers in its region to conduct effluent monitoring for the 2,3,7,8 TCDD congeners whether or not an effluent limit is required for 2,3,7,8 – TCDD. The monitoring is intended to assess the presence and amounts of the congeners being discharged to inland surface waters, enclosed bays, and estuaries. The Boards will use these monitoring data to establish strategies for a future multi-media approach to control these chemicals.
93. On August 6, 2001, the Board sent a letter to all the permitted Dischargers pursuant to Section 13267 of the California Water Code requiring the submittal of effluent and receiving water data on priority pollutants. This formal request for technical information addresses the insufficient effluent and ambient background data; and the dioxin study. The sampling plan was due October 1, 2001 and was approved by Board staff on December 20, 2001. An interim report presenting the data is due May 18, 2003, with the final report due 180 days prior to expiration of the permit.
94. The letter (described above) is referenced throughout the permit as the "August 6, 2001 Letter".

Other Discharge Characteristics and Permit Conditions

95. *O & M Manual.* An Operations and Maintenance Manual is maintained by the Discharger for purposes of providing plant and regulatory personnel with a source of information describing all

equipment, recommended operation strategies, process control monitoring, and maintenance activities. In order to remain a useful and relevant document, the manual shall be kept updated to reflect significant changes in treatment facility equipment and operation practices.

96. *NPDES Permit.* This Order serves as an NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code.
97. *Notification.* The Discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharge and have been provided an opportunity to submit their written views and recommendations.
98. *Public Hearing.* The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that Mirant Delta LLC shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge of wastewater at a location or in a manner different from that described in this Order is prohibited.
2. Discharges of water, materials, or wastes other than storm water, which are not otherwise authorized by an NPDES permit, to a storm drain system or waters of the State are prohibited.

B. EFFLUENT LIMITATIONS

The following effluent limitations apply to effluent discharged to Suisun Bay:

1. Discharge E-001 and E-006, shall not exceed the following limits:
 - a. pH 6.5 to 8.5
 - b. Chlorine residual 0.0² mg/L, instantaneous maximum
(free chlorine plus chloramines)
 - c. **Temperature Requirement:** The maximum temperature of the discharge at flood tide shall not exceed the natural receiving water temperature by more than 28 °F (15.6°C). The natural receiving water temperature shall be obtained from records of the California Department of Water Resources, Mallard Slough monitoring station, or shall be measured at the intake structure.
 - d. The discharge of polychlorinated biphenyl compounds is prohibited.

² Requirement defined as below the limit of detection using the amperometric method for total residual chlorine described in 40 CFR 136 or other methods accepted by Board staff. The Discharger may elect to use a continuous on-line monitoring system(s) for measuring flows and sodium bisulfite dosages (including a safety factor) to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Board staff will conclude that these false positive chlorine residual exceedances are not violations of this Permit limit.

2. Discharges E-001B through E-001E (Reverse Osmosis Drains and Reject, Boiler Blowdowns, Ion Exchange Regeneration Waste) shall not exceed the following limits:

Constituent	Units	30-Day Average	Maximum Daily
a. Total Suspended Solids	mg/L	30	100
b. Oil and Grease	mg/L	15	20

3. Discharges E-001H (Unit 7 Cooling Tower Blowdown) and E-006 (Unit 7 Cooling Tower Blowdown alternate discharge location) shall not contain constituents in excess of the following limits:

Constituents	Unit	30-day Average	Maximum Daily
a. The 126 priority pollutants contained in Appendix A of 40 CFR 423 added for cooling tower maintenance except:	µg/L	No detectable amount*	No detectable amount*
b. Chromium, total	mg/L	0.2	0.2
c. Zinc, total	mg/L	1.0	1.0
d. Chlorine residual ¹	mg/L	0.0	0.0
e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.			

* No detectable amount using analytical methods specified in 40 CFR 136.

4. Discharges E-001F (Fireside/Air Pre-Heater Washes) and E-001I (metal cleaning waste pond effluent), shall not contain constituents in excess of the following:

Constituents	Unit	30-Day Average	Maximum Daily
a. Total Suspended Solids	mg/L	30.0	100.0
b. Oil and Grease	mg/L	15.0	20.0
c. Copper, total	mg/L	1.0	1.0
d. Iron, Total	mg/L	1.0	1.0
e. This stream can only be discharged when the flow in E-001 is greater than 3 MGD.			

5. Stormwater discharges E-003 through E-0011 (except E-006), shall not exceed the following limits:

Constituents	Unit	30-Day Average	Maximum Daily
Oil and Grease	mg/L	10	20

6. The quantity of pollutant discharge from E-001B through E-001I shall not exceed the quantity determined by multiplying the flow of the low volume waste source times the allowable concentrations as set forth in Effluent Limitations B.2 through B.5. The quantity shall be calculated as follows:

(Mass Emission Limit in kg/day) = (Concentration Limit in mg/l) X (Actual Flow in million gallons per day averaged over the time interval to which the limit applies) X 3.78 (Conversion Factor)

7. **Whole Effluent Acute Toxicity**

Representative samples of E-001 and E-006 shall meet the following limits for acute toxicity. Compliance with these limits shall be achieved in accordance with Provision D.7 of this Order.

- a. The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be:
- (1) an 11-sample median value of not less than 90 percent survival ^{(b(1))}; and
 - (2) an 11-sample 90th percentile value of not less than 70 percent survival ^{(b(2))}.

- b. These acute toxicity limits are further defined as follows:
- (1) 11-sample median limit:
Any bioassay test showing survival of 90 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if five or more of the past ten or fewer bioassay tests also show less than 90 percent survival.
 - (2) 90th percentile limit:
Any bioassay test showing survival of 70 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit, if one or more of the past ten or fewer bioassay tests also shows less than 70 percent survival.
 - (3) If the Discharger demonstrates to the satisfaction of the Executive Officer that toxicity exceeding the levels cited above is caused by ammonia and that the ammonia in the discharge is not adversely impacting receiving water quality or beneficial uses, then such toxicity does not constitute a violation of this effluent limit.

8. **Toxic Substances:** E-001 and E-006 shall not exceed the following limits (1):

	Constituent	Interim Monthly Average	Units	Notes
a.	Chromium	14	µg/L	(1) (4)
b.	Copper	20	µg/L	(1) (2)
c.	Lead	5.3	µg/L	(1) (4)
d.	Mercury	0.165	µg/L	(1) (3) (4)
e.	Nickel	17	µg/L	(1) (4)

- (1) (a) All analyses shall be performed using current U.S. EPA methods, or equivalent methods approved in writing by the Executive Officer. The Discharger is in violation of the limit if the discharge concentration exceeds the effluent limitation and the reported minimum level (ML) for the analysis. This shall be considered a violation unless the Discharger demonstrates to the satisfaction of the Executive Officer that the exceedence is the result of elevated levels of the constituent in the intake. This demonstration shall not be based solely on the minimum requirements specified in the Self-monitoring Program.
- (b) Limits apply to the average concentration of all samples collected during the averaging period (Monthly = calendar month).
- (2) This interim limit shall remain in effect until June 30, 2007, or until the Board amends the limit based on intake credit, site-specific objectives or the Waste Load Allocation in the TMDL. However, during the next permit reissuance, Board staff may re-evaluate the interim limits.
- (3) Effluent mercury monitoring shall be performed by using ultra-clean sampling and analysis techniques, to the maximum extent practicable, with a minimum level of 0.002 µg/L or lower.
- (4) This interim limit shall remain in effect until March 31, 2010, or until the Board amends the limit based on intake credit, site-specific objectives or the Waste Load Allocation in the TMDL. However, during the next permit reissuance, Board staff may re-evaluate the interim limits.

9. **Interim Mass Emission Limit – Mercury:** Until calculation of intake credit is possible or TMDL and Waste Load Allocation efforts for mercury provide enough information to establish a different WQBEL, the Discharger shall demonstrate that the total mercury mass loading from Discharges to Suisun Bay at E-001 and E-006 outfalls (Effluent Stations E-001 & E-006) has not increased by complying with the following:

- a. Interim mass emission limit: The mass emission limit for mercury is 9.8 kilograms per month (kg/month). The total mercury mass load shall not exceed this limit.
- b. Compliance with this limit shall be evaluated using monthly moving averages of total mass load, computed as described below:

12 Month Monthly Moving Average of Total Mass Load = Average of the monthly total mass loads from the past 12 months.

Monthly Total Mass Load (kg/month) = Average daily flow in a calendar month in mgd X monthly effluent concentration measurement in $\mu\text{g/L}$ corresponding to the above flows for samples taken from E-001 X 0.1151. (If more than one concentration measurement is obtained in a calendar month, the average of these measurements is used as the monthly concentration value for that month. If test results are less than the reported ML, the Concentration value shall be assumed to be equal to the reported ML.)

The Discharger is in violation of the limit if the calculated 12 Monthly Moving Average of Total Mass Load exceed 9.8 kg/month unless the Discharger demonstrates to the satisfaction of the Executive Officer that the exceedence is the result of elevated levels of the constituent in the intake. This demonstration shall not be based solely on the minimum requirements specified in the Self-Monitoring Program.

- c. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each monthly Self-Monitoring Report. Compliance with each monthly mass limit will be determined based on the 12-month moving averages over the previous twelve months of monitoring. The Discharger may use monitoring data collected under accelerated schedules (i.e., special studies) to determine compliance.
- d. The mercury TMDL and WLAs will supersede this mass emission limitation upon their completion. The Clean Water Act's antidegradation rule, Section 402(o), indicates that this Order may be modified to include a less stringent requirement following completion of the TMDL and WLA, if the requirements for an exception to the Rule are met.

C. RECEIVING WATER LIMITATIONS

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:
 - a. Floating, suspended, or deposited macroscopic particulate matter or foam;
 - b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;
 - c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels, except as indicated in the effluent limitations;

- d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and
 - e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.
2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State at any one place within one foot of the water surface:
- a. Dissolved Oxygen: 7.0 mg/L, minimum

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.
 - b. pH: Variation from normal ambient pH by more than 0.5 pH units.
 - c. Un-ionized Ammonia: 0.025 mg/L as N, annual median; and
0.16 mg/L as N, maximum.
3. The discharge of waste shall not cause a violation of any particular water quality standard for receiving waters adopted by the Board or the State Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.
4. The discharge of E-001 shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.
5. The discharge of E-001 shall not cause more than 125 acres of surface water to rise to a temperature greater than 4°F above the natural temperature of the receiving water.

D. PROVISIONS

1. Permit Compliance and Rescission of Previous Waste Discharge Requirements

The Discharger shall comply with all sections of this Order beginning on July 1, 2002, at which time the Requirements prescribed by this Order supersede the requirements prescribed by Order No. 95-225. Order No. 95-225 is hereby rescinded upon the effective date of this Permit.

Special Studies

2. Thermal Effects study and Schedule

The Discharger shall conduct a receiving water beneficial use study to assess the thermal effects of the discharge.

Task

(1) Thermal Study Plan.

Compliance Date

90 calendar days after the selection of the final intake technology

Develop and submit a study plan, acceptable to the Executive Officer, to include, but not be limited to, tasks and schedules necessary to characterize the thermal effects of the discharge.

- (2) Study Commencement. As proposed in the Thermal Study Plan
Following approval by the Executive Officer commence work in accordance with the study plan and time schedule submitted pursuant to the approved plan.
- (3) Interim Report Quarterly, after study commencement
Submit results of the thermal effect study and document adverse impacts, if any, on attributed beneficial uses of the outfall location by discharging thermal wastes.
- (4) Final Report 180 days prior to permit expiration
Submit a final report, acceptable to the Executive Officer, documenting the results of the thermal effects investigation described above.

3. Entrainment and Impingement Study and Schedule

After implementation and reliable operation of the new intake technologies, the Discharger shall conduct an impingement study to verify the appropriateness of the intake technology selected. Depending on the results of the final study, the permit may be amended to require the Discharge to implement BTA.

Task

Compliance Date

- (1) Impingement Study Plan. 90 calendar days after the selection of the final intake technology
Develop and submit a study plan, acceptable to the Executive Officer, to include, but not be limited to, tasks and schedules necessary to characterize the extend of fish impingement.
- (2) Study Commencement. As proposed in the Impingement Study Plan
Following approval by the Executive Officer commence work in accordance with the study plan and time schedule submitted pursuant to the approved plan.
- (3) Interim Report Quarterly, after study commencement
Submit results of the impingement study and document adverse impacts, if any, on attributed beneficial uses.
- (4) Final Report 6 months prior to permit expiration
Submit a final report, acceptable to the Executive Officer, documenting the results of the impingement investigation described above.

4. Effluent Characterization for Selected Constituents

The Discharger shall monitor and evaluate effluent discharged to Suisun Bay for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter.

Sampling Plan: Mirant submitted a sampling plan to the Executive Officer on October 1, 2001, in response to the August 6, 2001 Letter. The plan was accepted as modified by a letter from the Board dated December 21, 2001. It specified sampling parameters, monitoring frequencies, locations, and analytical methods to be used. The sampling plan and interim and final reports shall be submitted to the Board in accordance with the schedule specified below.

Interim and Final Reports: An interim report is due on May 18, 2003. The report should summarize the data collected to date, and describe future monitoring to take place. A final report that presents all

the data shall be submitted to the Board 180 days prior to the Permit expiration date. This final report shall be submitted with the application for Permit reissuance.

5. Ambient Background Receiving Water Study

The Discharger shall collect or participate in collecting background ambient receiving water data with other Dischargers and/or through the RMP. This information is required to perform RPAs and to calculate effluent limitations. To fulfill this requirement, the Discharger shall submit data sufficient to characterize the concentration of each toxic pollutant listed in the CTR in the ambient receiving water. The data on the conventional water quality parameters (pH, salinity, and hardness) shall also be sufficient to characterize these parameters in the ambient receiving water at a point after the discharge has mixed with the receiving waters.

Sampling Plan: Mirant submitted a sampling plan to the Executive Officer on October 1, 2001, in response to the August 6, 2001 Letter. The plan was accepted as modified by a letter from the Board dated December 21, 2001. It specified collection of the required data in collaboration with other dischargers as part of the RMP. The sampling plan and interim and final reports shall be submitted to the Board in accordance with the schedule specified below.

Interim and Final Reports: An interim report is due on May 18, 2003. The report should summarize the data collected to date, and describe future monitoring to take place. A final report that presents all the data shall be submitted to the Board 180 days prior to the facility's Permit expiration date. This final report shall be submitted with the application for Permit reissuance.

6. Pollutant Prevention and Minimization Programs (PMP)

- a. According to Section 2.4.5 of the SIP, when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either:
 - (i) A sample result is reported as detected, but not quantified (less than the Minimum Level) and the effluent limitation is less than the reported Minimum Level; or
 - (ii) A sample result is reported as not detected (less than the Method Detection Limit) and the effluent limitation is less than the Method Detection Limit,The Discharger shall be required to expand its existing Pollution Prevention Program to include the reportable priority pollutant. A priority pollutant becomes a reportable priority pollutant when (1) there is evidence that it is present in the effluent above an effluent limitation and either (a)(i) or (a) (ii) is triggered or (2) if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level.
- b. If triggered by the reasons in Provision D.6.c. and notified by the Executive Officer, the Discharger's Pollution Prevention Program shall, within 6 months, also include:
 - (i) An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data;
 - (ii) Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer when it is demonstrated that influent monitoring is unlikely to produce useful analytical data;

- (iii) Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;
- (iv) Proposal of time schedules of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and
- (v) An annual status report that shall be sent to the Board including:
 - 1. All Pollution Prevention monitoring results for the previous year;
 - 2. A list of potential sources of the reportable priority pollutant(s);
 - 3. A summary of all actions undertaken pursuant to the control strategy; and
 - 4. A description of actions to be taken in the following year.
- c. To the extent where the requirements of the Pollution Prevention Program and the Pollutant Minimization Program overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
- d. These Pollution Prevention/Pollutant Minimization Program requirements are not intended to fulfill the requirements in The Clean Water Enforcement and Pollution Prevention Act of 1999 (Senate Bill 709).

Toxicity Requirements

7. Acute Toxicity

Compliance with acute toxicity requirements of this Order shall be achieved in accordance with the following:

- a. From Permit adoption date to June 30, 2003:
 - (1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour static renewal bioassays.
 - (2) Test organisms shall be fathead minnows and rainbow trout unless specified otherwise in writing by the Executive Officer.
 - (3) All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," 4th Edition, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).
- b. From July 1, 2003 on:
 - (1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour static renewal bioassays.
 - (2) Test organisms shall be the most sensitive species (fathead minnow or rainbow trout) from the previous year's toxicity tests unless specified otherwise in writing by the Executive Officer.
 - (3) All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," 4th Edition, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

Ongoing Programs

8. Regional Monitoring Program

The Discharger shall continue to participate in the Regional Monitoring Program (RMP) for trace substances in San Francisco Bay in lieu of more extensive effluent and receiving water self-monitoring requirements that may be imposed.

Facilities Status Reports and Permit Administration**9. Operations and Maintenance Manual, Review and Status Reports**

- a. The Discharger shall maintain an Operations and Maintenance Manual (O & M Manual) as described in the findings of this Order for the Discharger's wastewater facilities. The O & M Manual shall be maintained in useable condition, and available for reference and use by all applicable personnel. The O & M Manual will be on file six months after the effective date of this Permit.
- b. The Discharger shall regularly review, and revise or update as necessary, the O & M Manual(s) in order for the document(s) to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and revisions or updates shall be completed as necessary. For any significant changes in treatment facility equipment or operation practices, applicable revisions shall be completed within 90 days of completion of such changes.
- c. Annually, the Discharger shall submit to the Board a report describing the current status of its O & M Manual review and updating. This report shall include an estimated time schedule for completion of any revisions determined necessary, a description of any completed revisions, or a statement that no revisions are needed. This report shall be submitted in accordance with the Annual Status Report Provision below.

10. Contingency Plan, Review and Status Reports.

- a. The Discharger shall maintain a Contingency Plan as required by Board Resolution 74-10 (attached), and as prudent in accordance with current municipal facility emergency planning. The discharge of pollutants in violation of this Order where the Discharger has failed to develop and/or adequately implement a contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.
- b. The Discharger shall regularly review, and update as necessary, the Contingency Plan in order for the plan to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and updates shall be completed as necessary.
- c. Annually, the Discharger shall submit to the Board a report describing the current status of its Contingency Plan review and update. This report shall include a description or copy of any completed revisions, or a statement that no changes are needed. This report shall be submitted in accordance with the Annual Status Report Provision below.

11. Annual Status Reports

The reports identified above in Provisions **E.9.c**, and **E.10.c** shall be submitted to the Board annually, by June 30 of each year. Modification of report submittal dates may be authorized, in writing, by the Executive Officer.

12. Stormwater Sampling and Reporting Requirements

- a. The Discharger shall develop and implement a Stormwater Pollution Prevention Plan (SWPPP) acceptable to the Executive Officer in accordance with the attached Standard Stormwater Provisions. The SWPPP shall cover the entire facility owned and operated by the Discharger. It shall describe the management and handling of stormwater runoff from the facility, and measures taken to prevent contamination of stormwater or discharge of pollutants with the stormwaters. As part of the SWPPP, the Discharger shall (1) identify on a map of appropriate scale the areas which contribute runoff to the permitted discharge points, (2) describe the activities on each area and the potential for contamination of the runoff and (3) address the feasibility for containment and/or treatment of the stormwater.
- b. Stormwater sampling and monitoring

- (1) The Discharger shall conduct stormwater sampling and monitoring in accordance with requirements specified in Section II of the Self-Monitoring Program.
- (2) The Discharger shall conduct visual observations of the stormwater discharge locations on at least one storm event per month that produces significant stormwater discharge to observe the presence of floating and suspended materials, oil and grease, discolorations, turbidity, and odor, etc. A significant stormwater discharge is a continuous discharge of stormwater for a minimum of one hour, or intermittent discharge of stormwater for a minimum of three hours in a 12 hour period.

13. New Water Quality Objectives

As new or revised water quality objectives come into effect for the Bay and contiguous water bodies (whether statewide, regional or site-specific), effluent limitations in this Order will be modified as necessary to reflect updated water quality objectives. Adoption of effluent limitations contained in this Order are not intended to restrict in any way future modifications based on legally adopted water quality objectives.

14. Conservation Program and Resources Management Program

The Discharger shall implement the conservation program as developed by the ESA consultation process, as approved and updated by USFWS, NMFS, and CDFG. Until the implementation of the conservation program, the Discharger shall implement the Resource Management Program, as set forth in Attachment F.

15. Self-Monitoring Program

The Discharger shall comply with the Self-Monitoring Program (SMP) for this Order as adopted by the Board. Self-Monitoring Reports (SMRs) shall be received by the Board no later than 45 days after the end of the reporting month. The SMP may be amended by the Executive Officer pursuant to U.S. EPA regulations 40CFR 122.62, 122.63 and 124.5.

16. Standard Provisions and Reporting Requirements

The Discharger shall comply with all applicable items of the *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (attached), or any amendments thereafter. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications of this Order shall apply.

17. Change in Control or Ownership.

- a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board.
- b. To assume responsibility of and operations under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see *Standard Provisions & Reporting Requirements*, August 1993, Section E.4.). Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

18. Permit Reopener

The Board may modify, or revoke and reissue, this Order and Permit if present or future investigations demonstrate that the discharge(s) governed by this Order will or have the potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters.

19. NPDES Permit

This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective on July 1, 2002, provided the U.S. EPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

20. Order Expiration and Reapplication

- a. This Order expires on May 31, 2007.
- b. In accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, the Discharger must file a report of waste discharge no later than 180 days before the expiration date of this Order as application for reissue of this Permit and waste discharge requirements.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 19, 2002.



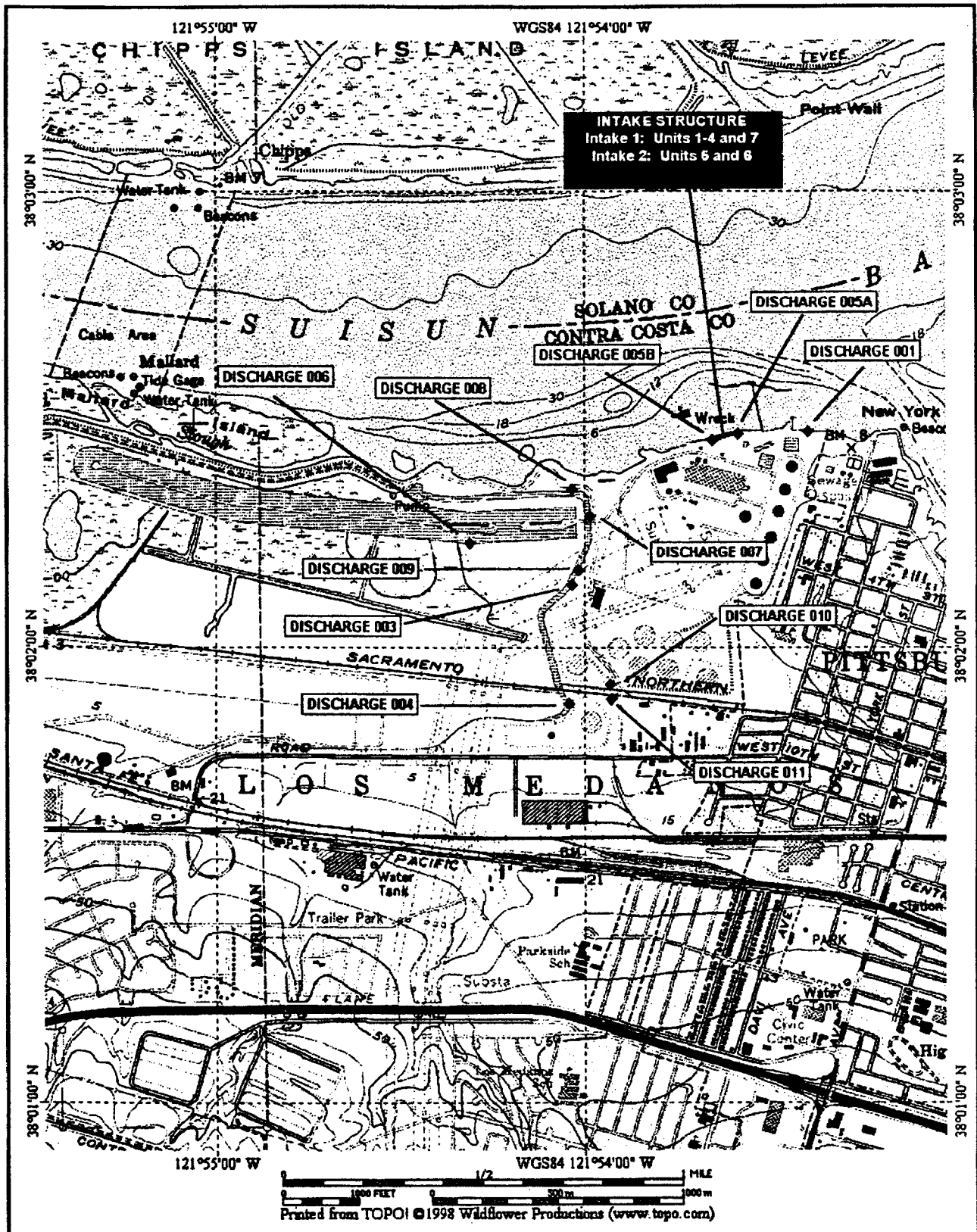
LORETTA K. BARSAMIAN
Executive Officer

Attachments:

- A. Discharge Facility Location Map
- B. Discharge Facility Schematic Water Flow Diagrams
- C. Self-Monitoring Program, Part A (August 1993, not included here due to length, available at <http://www.swrcb.ca.gov/rwqcb2/download.htm>) and Part B
- D. Standard Provisions and Reporting Requirements, August 1993 (Not included here due to length, available at <http://www.swrcb.ca.gov/rwqcb2/download.htm>)
- E. Board Resolution No. 74-10 (Not included here due to length, available at <http://www.swrcb.ca.gov/rwqcb2/download.htm>)
- F. Resources Management Program

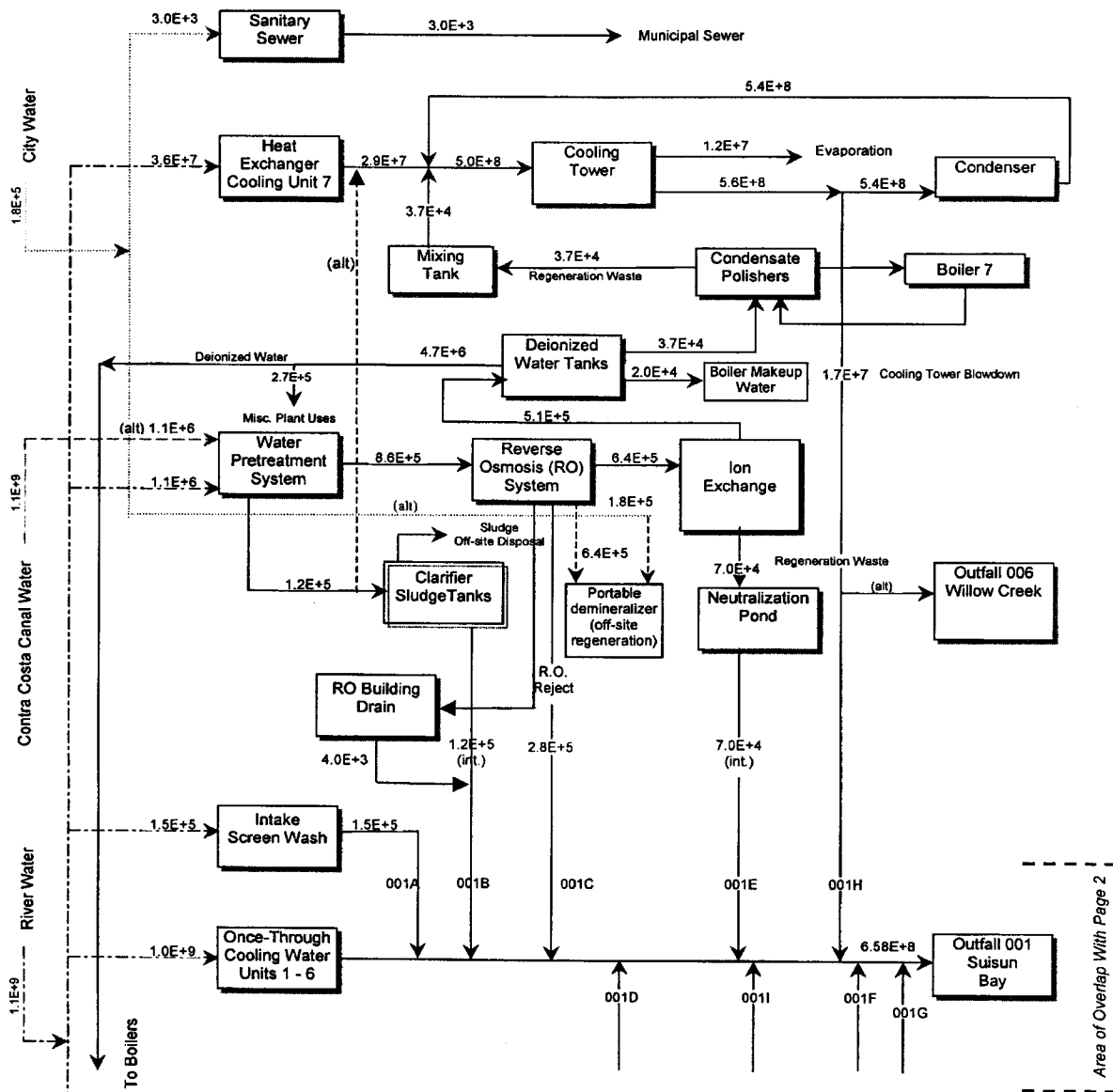
Attachment A

Discharge Facility Location Map



Attachment B

Discharge Facility Schematic Water Flow Diagrams



NOTES:
 Outfall 002: Yard drain (discharge eliminated).
 All numbers are average gallons per day.

Figure 2
 Schematic Water Flow Diagram

Mirant Delta, LLC — Pittsburg Power Plant, 696 West 10th Street, Pittsburg, California 94565

May 10, 2002

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NPDES Permit No. 0004880

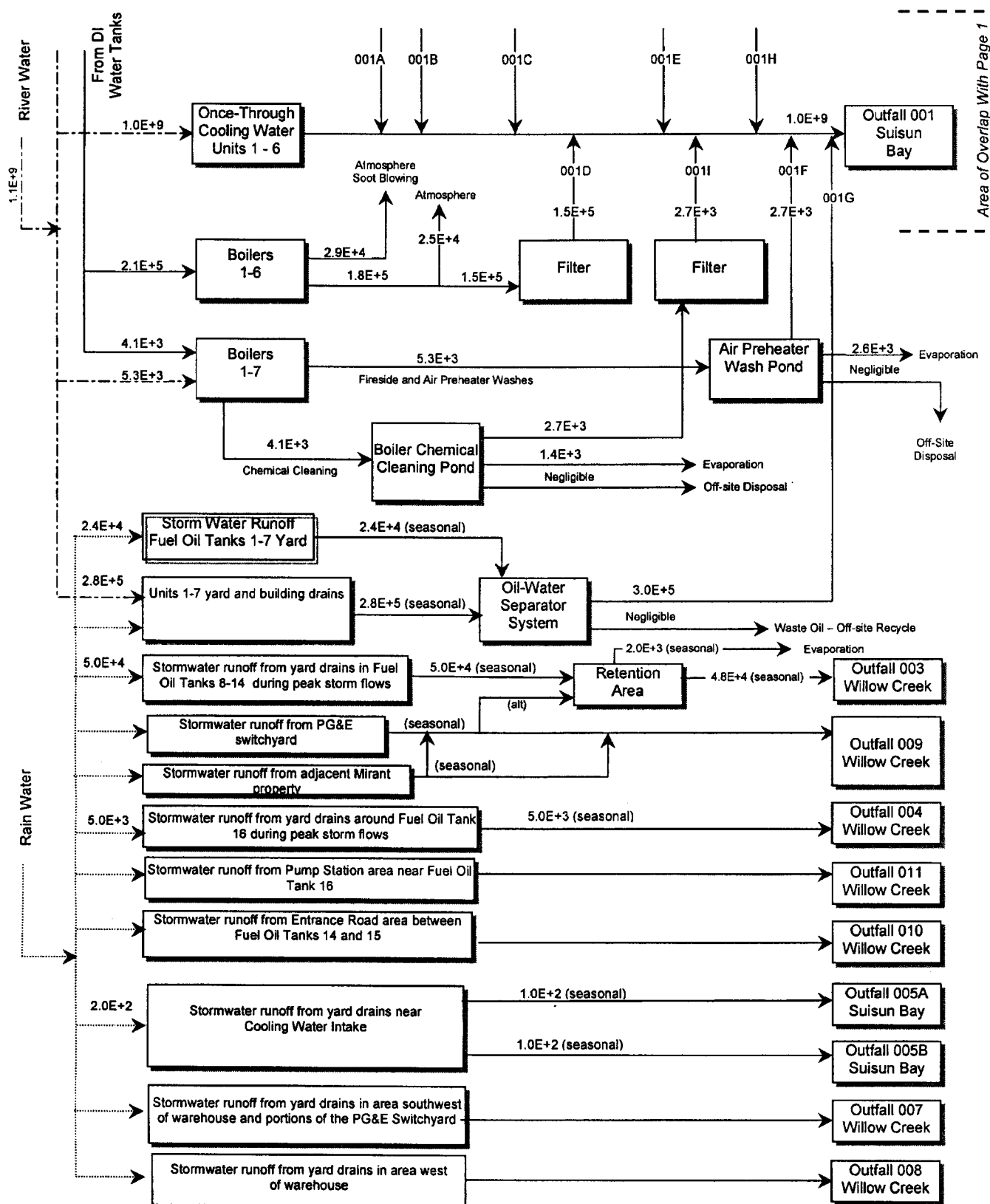


Figure 2 (cont'd)
Schematic Water Flow Diagram

Mirant Delta, LLC — Pittsburg Power Plant, 696 West 10th Street, Pittsburg, California 94565

Attachment C

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

**SELF MONITORING PROGRAM
FOR**

**MIRANT DELTA, LLC
PITTSBURG POWER PLANT**

**PITTSBURG
CONTRA COSTA COUNTY**

NPDES PERMIT NO. CA0004880

ORDER NO. R2-2002 - 0072

Consists of:
Part A (not attached)
Adopted August 1993

And

Part B (Attached)
Adopted June 19, 2002

CONTENTS:

- I. BASIS and PURPOSE**
- II. SAMPLING and ANALYTICAL METHODS**
- III. DEFINITION of TERMS**
- IV. DESCRIPTION of SAMPLING and OBSERVATION STATIONS**
- V. SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS (Table 1)**
- VI. SPECIFICATIONS for SAMPLING, ANALYSES and OBSERVATIONS**
- VII. SELECTED CONSTITUENTS MONITORING (Table 2)**
- VIII. REPORTING REQUIREMENTS**
- IX. RECORDING REQUIREMENTS - RECORDS TO BE MAINTAINED**
- X. SELF-MONITORING PROGRAM CERTIFICATION**

I. BASIS and PURPOSE

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268 and 13387 (b) of the California Water Code and this Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste Discharger, also referred to as self-monitoring, are to:

- (1) document compliance with waste discharge requirements established by the Board,
- (2) facilitate self-policing by the Discharger in prevention and abatement of pollution arising from waste discharges,
- (3) develop or assist in development of effluent limitations or other waste discharge requirements, pretreatment standards, whole effluent toxicity standards and other regional, state or national standards of performance, and
- (4) prepare water and wastewater quality inventories.

II. SAMPLING and ANALYTICAL METHODS

Sample collection, handling, storage and analyses shall be performed in accordance with regulations given in Code of Federal Regulations Title 40, Part 136 (40 CFR 136) or other methods approved and specified by the Board's Executive Officer.

Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DOHS) through the DOHS laboratory certification program or by a laboratory for which waiver from such certification has been provided by the Executive Officer.

The director of the laboratory whose name appears on the DOHS laboratory certification, or the director's authorized designee who is directly responsible for analytical work performed shall supervise all analytical work including appropriate quality assurance and quality control procedures, and shall sign all reports of such work conducted as part of this Self-Monitoring Program (SMP).

All monitoring instruments and equipment shall be properly calibrated and maintained in order to ensure accuracy of monitoring sampling and measurements.

III. DEFINITION of TERMS

A. Types of Samples

1. *Grab Sample.* A grab sample is defined as an individual sample collected in a short period of time not exceeding fifteen minutes. A grab sample represents only the conditions that exist at the time the sample is collected. Grab samples shall be collected during normal peak loading conditions for the parameter of interest, which may not necessarily correspond with periods of peak hydraulic conditions. Grab samples are used primarily in determining compliance with daily and instantaneous maximum or minimum limits.
2. *Composite Sample.* A composite sample is defined as a sample composed of multiple individual grab samples collected at regular intervals throughout a given period of time, with the individual grab samples mixed in proportion to the instantaneous waste flow rate at the time of each grab sample. For standard composite sampling required by this SMP, grab sample intervals shall not exceed one hour, and sample proportioning shall not vary by more than ten percent of the flow rate.
3. *Flow Sample.* A flow sample is defined as the accurate measurement of either a volumetric flow rate or flow volume using a properly calibrated and maintained flow measuring device. Flows are typically reported as Average Daily Flow, which is the average flow rate during a 24-hour calendar day, and typically reported in units of million gallons per day (mgd).

B. Statistical Parameters

1. *Average.* Average is the arithmetic mean; i.e., the sum all values in a given data set, divided by the total number of values. A monthly average applies to samples collected in a calendar month.
2. *Median.* The median is the middle value of an ordered set of values; i.e., the value in the ordered set for which there is an equal number of values both greater than and less than this middle value. If the data set is an even number of values, the median is the arithmetic mean of the two middle values.

C. Standard Observations

1. Wastewater Effluent:
 - a. Floating or suspended material of waste origin (eg, oil, grease, algae, and other macroscopic particulate matter): Presence or absence; description of any materials observed.
 - b. Nuisance Odors: Presence or absence; characterization description if present; apparent source(s); and distance of travel.
2. Perimeter of facility:
 - a. Nuisance Odors: same as 1.b. above.
 - b. Weather conditions:
 - (1) General characterization (eg, sunny, cloudy, rainy);
 - (2) Air temperature
 - (3) Wind: Direction and estimated velocity.
 - (4) Precipitation: Total precipitation since previous observation.

IV. DESCRIPTION of SAMPLING and OBSERVATION STATIONS

NOTE: A sketch showing the locations of all sampling and observation stations shall be included in the Annual Report, and in the monthly report if stations change.

<u>Station</u>	<u>Description</u>
A. <u>INFLUENT</u>	
I-001	At any point in the influent stream prior to the condensers and upstream of any treatment where representative samples of the influent can be obtained.
B. <u>EFFLUENT</u>	
E-001	Once-Through Cooling Water (Units 1 through 6) At any point in the outfall for combined discharge from Unit 1 through 7, from which once-through and low volume wastes are discharged, between the point of discharge to Suisun Bay and the point at which all pollutants tributary to that outfall are present.
E-001B - E-001E	Low Volume Wastes At any point in the low volume waste streams prior to mixing with once-through cooling water.
E-001F	Settling Pond Effluent from Fireside/air Preheater Washes (Boilers 1 through 7) At any point prior to mixing with once-through cooling water
E-001G	Oil-Water Separator Effluent from yard and building stormwater runoff

- At any point following treatment (sedimentation and oil-water separation) prior to mixing with once-through cooling water
- E-001H Unit 7 Cooling Tower Blowdown
At any point in the cooling water blowdown stream prior to mixing with once-through cooling water or any other stream.
- E-001I Units 1 through 7 Boiler Chemical Cleaning
At any point where metal cleaning waste pond effluent is discharged, prior to combination with once-through cooling water or any other stream.
- E-003 Stormwater runoff from yard drains around Fuel Oil Tanks 8 through 14
At any point in the outfall of combined yard drains from fuel oil tanks 8-14 prior to discharge to Willow Creek.
- E-004 Stormwater runoff from yard drains around Fuel Oil Tank 16
At any point in the outfall from yard drains from Fuel Oil Tank 16 prior to discharge to Willow Creek.
- E-005A&B Stormwater runoff from yard drains near Cooling Water Intake
At any point in the outfall from yard drains from the vicinity of the cooling water intake prior to discharge to Suisun Bay.
- E-006 Alternate Discharge Point for Discharge E-001H
At any point in the cooling water blowdown stream prior to discharge to Willow Creek.
- E-007 Stormwater runoff from yard drains southwest of Warehouse and portions of the PG&E Switchyard
At any point in the outfall from yard drains from the area southwest of the warehouse prior to discharge to Willow Creek
- E-008 Stormwater runoff from yard drains around area west of Warehouse
At any point in the outfall from yard drains from the area west of the warehouse prior to discharge to Willow Creek
- E-009 Stormwater runoff from PG&E Switchyard and adjacent Mirant property
At any point in the outfall from yard drains from the PG&E switchyard prior to discharge to Willow Creek
- E-010 Stormwater runoff from Entrance Road area between Fuel Oil Tanks 14 and 15
At any point in the outfall from drains from the entrance road area prior to discharge to Willow Creek
- E-011 Stormwater runoff from Pump Station area near Fuel Oil Tank 16
At any point in the outfall from yard drains from the pump station area near Fuel Oil Tank 16 prior to discharge to Willow Creek

V. SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS

The schedule of sampling, analysis and observation shall be that given in Table 1 below.

TABLE 1 - SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS [1] [2]

Sampling Station:			I-001		E-001		E-001B to E-001E		E-001F and E-001I		E-001H and E-006	E-001G, E-003 to E-005, E-007 to E-011
			Influent		Combined Effluent		Low Volume Wastes		Metal Cleaning Wastes		Cooling Tower Blowdown	Stormwater
Type of Sample			G	C-24	G	C-24	G	C-24	G	C-24	G	G
Parameter	Units	Notes										
Flow Rate	MGD	[3]		Cont/D		Cont/D		Cont/D		Cont/D	Cont/D	Cont/D
pH	pH units			M	M							
Temperature	°C or F		2/W			Cont/D						
Dissolved	mg/L				M							
TSS	mg/L			M		M		M		D	M	M
Oil & Grease	mg/L	[4]			M		M			D	M	M
Chlorine Residual	mg/L				Grab, Daily when treating							
Acute Toxicity	% Survival	[5]				M						
Cadmium	µg/L										M (If adding)	
Chromium, Total	µg/L	[9]		M		M		M		D	M (If adding)	
Copper	µg/L			M		M		M		D	M (If adding)	
Iron	µg/L									D		
Lead	µg/L			M		M		M		D	M (If adding)	
Mercury	µg/L	[6]		M		M		M		D	M (If adding)	
Nickel	µg/L			M		M		M		D	M (If adding)	
Zinc	µg/L										M (If adding)	
Cyanide	µg/L	[7]	Q		Q		Q					
126 Priority Pollutant list in Appendix A of 40 CFR 423	µg/L	[8]									M (If adding)	

V. SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS (continued)

LEGEND FOR TABLE 1

Sampling Stations:

I = facility influent
E = facility effluent

Types of Samples:

C-24= composite sample, 24 hours
(includes continuous sampling, such as
for flows)
G= grab sample

Frequency of Sampling:

ont/D = continuous monitoring & daily reporting
D = once each day
M = once each month
2/W = twice each week (on separate days)
Y = once each calendar year
3/W = three times each calendar week (on separate days)
Q = once each calendar quarter

Parameter and Unit Abbreviations:

TSS = Total Suspended Solids
mgd = million gallons per day
mg/L = milligrams per liter
µg/L = micrograms per liter
kg/mo = kilograms per month

FOOTNOTES FOR TABLE 1

- [1] Additional details regarding sampling, analyses and observations are given in Section VI of this SMP, *Specifications for Sampling, Analyses and Observations* (SMP Section VI).
- [2] The Discharger shall monitor the waste streams only when there is a discharge.
- [3] Flow Monitoring.
Flow monitoring indicated as continuous monitoring in Table 1 shall be conducted by continuous measurement of flows, or calculation of flows from operating data, and reporting of the following measurements:
Influent (I-001), and Effluent (E-001):
a. Daily: (1) Average Daily Flow (mgd)
(2) Maximum Daily Flow (mgd)
(3) Minimum Daily Flow (mgd).
b. Monthly: The same values as given in a. above, for the calendar month.
- [4] Oil & Grease Monitoring.
Except for stormwater discharges, each Oil & Grease sample event shall consist of a composite sample comprised of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. The grab samples shall be mixed in proportion to the instantaneous flow rates occurring at the time of each grab sample, within an accuracy of plus or minus 5 %. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsings as soon as possible after use, and the solvent rinsings shall be added to the composite sample for extraction and analysis.
- [5] Acute Toxicity Monitoring (Static Renewal bioassay tests).
The following parameters shall be monitored on the sample stream used for the acute toxicity bioassays, at the start of the bioassay test and daily for the duration of the bioassay test, and the results reported: flow rate, water hardness, alkalinity, pH, temperature, dissolved oxygen, and ammonia nitrogen. If the fish survival rate in the effluent is less than 70% or the control fish survival rate is less than 90%, bioassay test shall be restarted with new batches of fish and continue back to back until compliance is demonstrated.

- [6] Use ultra-clean sampling (EPA 1669) to the maximum extent practicable, and ultra-clean analytical methods (EPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as EPA 245), if that alternate method has a minimum Level of 2 ng/l or less.
- [7] The Discharger may, at its option, analyze for cyanide as Weak Acid Dissociable Cyanide using protocols specified in Standard Method Part 4500-CN-I, U.S. EPA Method OI 1677, or equivalent alternatives in latest edition. Alternative methods of analysis must be approved by the Executive Officer.
- [8] The monitoring is required when adding maintenance chemicals, unless the Discharger certifies that the chemical added do not contain priority pollutants on the list.
- [9] The Discharger may, at its option, collect 24-hr composite samples for total chromium analysis.

VI. SPECIFICATIONS for SAMPLING, ANALYSES and OBSERVATIONS

Sampling, analyses and observations, and recording and reporting of results shall be conducted in accordance with the schedule given in Table 1 of this SMP, the following specifications, as well as all other applicable requirements given in this SMP. All analyses shall be conducted using analytical methods that are commercially and reasonably available, and that provide quantification of sampling parameters and constituents sufficient to evaluate compliance with applicable effluent limits.

A. Influent Monitoring.

Influent monitoring identified in Table 1 of this SMP is the minimum required monitoring.

B. Effluent Monitoring.

- a. Composite samples of effluent shall be collected on varying days selected at random coincident with influent composite sampling unless otherwise stipulated. The Executive Officer may approve an alternative sampling plan if it is demonstrated to the Executive Officer's satisfaction that expected operating conditions for the facility warrant a deviation from the standard sampling plan.
- b. Grab samples of effluent shall be collected during periods of maximum peak flows and shall coincide with effluent composite sample days.
- c. Fish bioassay samples shall be collected on days coincident with effluent composite sampling.
 - 1) Bioassay tests should be performed on effluent samples after chlorination-dechlorination.
 - 2) Total ammonia nitrogen shall be analyzed and un-ionized ammonia calculated whenever fish bioassay test results fail to meet the specified percent survival.
- d. If two consecutive samples of a constituent monitored on a weekly or monthly basis in a 30-day period exceed the monthly average effluent limit for any parameter, (or if the required sampling frequency is once per month and the monthly sample exceeds the monthly average limit), the sampling frequency shall be increased to daily until the additional sampling shows that the most recent 30-day moving average is in compliance with the monthly average limit.
- e. If any maximum daily limit is exceeded, the sampling frequency shall be increased to daily until two samples collected on consecutive days show compliance with the maximum daily limit.
- f. If the final or intermediate results of any single bioassay test indicate a threatened violation (i.e. the percentage of surviving test organisms is less than the required survival percentage), a new test will begin and the Discharger shall investigate the cause of the mortalities and report the finding in the next self-monitoring report.
- g. Chlorine residual analyzers shall be calibrated against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, grab samples shall be collected at least every 30 minutes until compliance is achieved.

- h. When any type of bypass occurs, composite samples shall be collected on a daily basis for all constituents at all affected discharge points which have effluent limits for the duration of the bypass.

VII. REPORTING REQUIREMENTS

- A. General Reporting Requirements are described in Section E of the Board's "*Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits*", dated August 1993.

- B. Monthly Self-Monitoring Report (SMR)

For each calendar month, a self-monitoring report (SMR) shall be submitted to the Board in accordance with the following:

1. The purpose of the report is to document performance, effluent quality and compliance with waste discharge requirements prescribed by this Order, as demonstrated by the monitoring program data and the Discharger's operation practices.
2. The report shall be submitted to the Board no later than 30 days after the end of the reporting month.
3. *Letter of Transmittal*
Each report shall be submitted with a letter of transmittal. This letter shall include the following:
 - (a) Identification of all violations of effluent limits or other discharge requirements found during the monitoring period;
 - (b) Details of the violations: parameters, magnitude, test results, frequency, and dates;
 - (c) The cause of the violations;
 - (d) Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory.
 - (e) Signature: The letter of transmittal shall be signed by the Discharger's principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

"I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."
4. *Compliance Evaluation Summary*
Each report shall include a compliance evaluation summary. This summary shall include, for each parameter for which effluent limits are specified in the Permit, the number of samples taken during the monitoring period, and the number of samples in violation of applicable effluent limits.
5. *Results of Analyses and Observations.*
 - (a) Tabulations of all required analyses and observations, including parameter, sample date and time, sample station, and test result.
 - (b) If any parameter is monitored more frequently than required by this Permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period.
 - (c) Calculations for all effluent limits that require averaging of measurements shall utilize an arithmetic mean, unless specified otherwise in this Permit or SMP.
6. *Effluent Data Summary - U.S. EPA NPDES Discharge Monitoring Reports.*

Summary tabulations of monitoring data including maximum, minimum and average values for the monitoring period shall be reported in accordance with the format given by the U.S. EPA NPDES Discharge Monitoring Report(s) (DMRs; US EPA Form 3320-1 or successor). Copies of these DMRs shall be provided to U.S. EPA as required by U.S. EPA.

7. *Data Reporting for Results Not Yet Available.* The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in timely manner. The Board recognizes that certain analyses require additional time in order to complete analytical processes and result reporting. For cases where required monitoring parameters require additional time to complete analytical processes and reporting, and results are not available in time to be included in the SMR for the monitoring period, such cases shall be described in the SMR. Data for these parameters, and relevant discussions of any observed violations, shall be included in the next following SMR.

C. Self-Monitoring Program Annual Report (Annual Report).

An Annual Report shall be submitted for each calendar year. The report shall be submitted to the Board by February 15 of the following year. This report shall include the following:

1. Both tabular and graphical summaries of monitoring data collected during the calendar year that characterize facility performance and compliance with waste discharge requirements.
2. A comprehensive discussion of facility performance and compliance with waste discharge requirements. This discussion should include any corrective actions taken or planned such as changes to facility equipment or operation practices which may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment or disposal practices.
3. A plan view drawing or map showing the Discharger's facility, flow routing and sampling and observation station locations.

D. Spill Reports.

1. A report shall be made of any spill of oil or other hazardous material.
2. The spill shall be reported by telephone as soon as possible and no later than 24 hours following occurrence or Discharger's knowledge of occurrence. Spills shall be reported by telephone as follows:
 - a. During weekdays, during office hours of 8 am to 5 pm, to the Regional Board:
Current phone number: (510) 622 - 2460.
 - b. During non-office hours, to the State Office of Emergency Services:
Current phone number: (800) 852 - 7550.
3. A written report shall be submitted to the Regional Board within five (5) working days following telephone notification, unless directed otherwise by Board staff. A report submitted by facsimile transmission is acceptable for this reporting. The written report shall include the following:
 - a. Date and time of spill, and duration if known.
 - b. Location of spill (street address or description of location).
 - c. Nature of material spilled.
 - d. Quantity of material involved.
 - e. Receiving water body affected.
 - f. Cause of spill.
 - g. Observed impacts to receiving waters (e.g., discoloration, oil sheen, fish kill).
 - h. Corrective actions that were taken to contain, minimize or cleanup the spill.
 - i. Future corrective actions planned to be taken in order to prevent recurrence, and time schedule of implementation.
 - j. Persons or agencies contacted.

VIII. RECORDING REQUIREMENTS - RECORDS TO BE MAINTAINED

Written reports, electronic records, strip charts, equipment calibration and maintenance records, and other records pertinent to demonstrating compliance with waste discharge requirements including self-

monitoring program requirements, shall be maintained by the Discharger in a manner and at a location (e.g., Discharger offices) such that the records are accessible to Board staff. These records shall be retained by the Discharger for a minimum of three years. The minimum period of retention shall be extended during the course of any unresolved litigation regarding the subject discharges, or when requested by the Board or by the Regional Administrator of the US EPA, Region IX.

Records to be maintained shall include the following:

A. Parameter Sampling and Analyses, and Observations.

For each sample, analysis or observation conducted, records shall include the following:

1. Parameter
2. Identity of sampling or observation station, consistent with the station descriptions given in this SMP.
3. Date and time of sampling or observation.
4. Method of sampling (grab, composite, other method)
5. Date and time analysis started and completed, and name of personnel or contract laboratory performing the analysis.
6. Reference or description of procedure(s) used for sample preservation and handling, and analytical method(s) used.
7. Calculations of results.
8. Analytical method detection limits and related quantitation parameters.
9. Results of analyses or observations.

B. Flow Monitoring Data.

For all required flow monitoring (eg, influent and effluent flows), records shall include the following:

1. Total flow or volume, for each day.
2. Maximum, minimum and average daily flows for each calendar month.

IX. SELF-MONITORING PROGRAM CERTIFICATION

I, Loretta K. Barsamian, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No.R2-2002-0072.
2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.
3. Is effective on July 1, 2002.


LORETTA K. BARSAMIAN
Executive Officer

Attachment F

Resources Management Program

Section 316(b) of Clean Water Act (CWA) (33 USC, Section 1326[b]) requires that the location, design, construction, and capacity of cooling water intake structures reflect Best Technology Available (BTA) for minimizing adverse environmental impacts. The impact of the Pittsburg and Contra Costa power plants' cooling water intake systems (CWIS) is a function of the number of organisms entrained (drawn into the cooling water system) and impinged (retained on the intake screens).

The cooling water system intakes for the Pittsburg (PPP) and Contra Costa (CCPP) power plants (collectively, the "plants") are in the nursery area for striped bass, which has been the principal organism of concern. Young striped bass and other fishes and invertebrates are entrained in the cooling system and are subjected to mechanical and thermal stresses. Most of the striped bass losses occur in an approximately 75-day period between May and mid-July.

Background

In June 1986, the Central Valley and the San Francisco Regional Water Quality Control Boards (the Boards) adopted Amended Order No. 86-47 for the PPP and Second Amended Order No.83-66 for the CCPP. In those Orders, the Boards agreed to the plants former owner's (PG&E) proposed means of meeting the BTA requirements for intake structures. As described in those Orders, PG&E improved intake structures, implemented a Resources Management Program, conducted a Striped Bass Monitoring Program (SBMP), and stocked hatchery striped bass in the Delta as mitigation for entrainment losses. BTA for subsequent NPDES Permits for the plants continued to include the maintenance of intake structures, the Resources Management Program, and a striped bass monitoring and replacement program. The SBMP was designed to determine the start and end date of the entrainment period based on larval striped bass density data collected at the discharges of the plants. The striped bass replacement program ended in 1994 because of the potential of these hatchery-raised fish to prey on listed salmon species and Delta smelt. The SBMP has not been conducted since 1994 because the power plants do not have incidental take authorizations allowing for the collection of listed Delta smelt; listed salmonids are not expected to be entrained because they spawn in freshwater far upstream of the power plant intake. The present permits continue to define BTA as maintaining intake structures and implementation of the Resources Management Program. The Resources Management Program will be replaced by the conservation program that is approved by USFWS, NMFS, and CDFG through the ESA consultation process, and such conservation program will be BTA for purposes of this permit. Striped bass monitoring may be reinstated when the plants obtain incidental take authorizations.

Description of Resources Management Program

The Resources Management Program was developed to reduce striped bass entrainment losses from May 1 through approximately mid-July by altering the normal operating procedures of the plants. Changes to plant operation include reducing the volume of cooling water flow by using variable speed pumps, preferential dispatching of units, and reducing discharge temperatures. The Resources Management Program begins either May 1 or a later date as determined by the results of the SBMP. The Resources Management Program ends when the 38-mm index is predicted to be set by the California Department of Fish and Game (CDFG) or July 15, whichever is earlier. The CDFG administers the SBMP through an Agreement with Mirant Delta, LLC. Agreement outlines procedures and guidelines for the SBMP that may be conducted at each plant, and specifies the method for calculating the percentage reduction of striped bass losses for the entrainment period. The CDFG Agreement specifies that, depending on the outcome of a striped bass loss reduction calculation, an amount of money is to be paid to CDFG by Mirant as mitigation for striped bass losses. The Agreement also provides for a "no sampling" alternative, which requires that the plant(s) initiate the Resources Management Program on May 1 if biological sampling is not conducted. It also includes criteria that specify the start and end of the entrainment period, fish densities, and minimum length of the entrainment period. The Agreement was updated by the Discharger and CDFG in 1995 and is made a part of this Order. The Discharger and CDFG are currently negotiating an update to the Agreement, which will replace the existing Agreement as part of this Order.

The Resources Management Program is implemented through a provision of this Order, and involves coordinated operation of both the Pittsburg and the Contra Costa power plants in order to reduce losses of striped bass, and includes preferential dispatch and entrainment period requirements. Preferential dispatch requires that: 1) Pittsburg Power Plant Unit 7 be dispatched before any other unit (except under certain circumstances), 2) variable speed drive (VSD) pumps be used to minimize cooling water flows, and 3) the units at the CCPP and PPP are dispatched in a manner that will minimize discharges of water warmer than 86°F to minimize thermal mortality of striped bass larvae. PPP Unit 7 is equipped with a closed-cycle cooling and requires substantially less river water, thereby entraining less fish. Unit dispatching guidelines are described below.

In a report dated January 1, 1992, PG&E summarized the results of a re-evaluation of intake screen technology for the Pittsburg and Contra Costa power plants. These studies were conducted to fulfill CWA Section 316(b) requirements. These studies showed that there have been no technological improvements that could be applied to the cooling water systems at either plant that would achieve substantial reductions in fish losses beyond those already achieved by the present BTA program. This study re-evaluation was conducted in consultation with CDFG, USFWS, and NMFS.

Unit Dispatching Guidelines during the Entrainment Period

The Discharger may operate units without restraint at either power plant if the Discharger demonstrates with the SBMP's threshold monitoring component that the densities of striped bass do not exceed the threshold specified in the CDFG Agreement at that power plant. During the entrainment period (the start date of which has been determined by the requirements of the SBMP or May 1 if monitoring is not conducted), the Discharger shall implement the following Resources Management Program Provisions, which are designed to minimize adverse environmental impacts:

1. The Discharger shall maximize the commitment of, dispatching of, and power production from Pittsburg Unit 7, as required to meet system demand, in place of and before the dispatching and power production above minimum load at any other unit at Pittsburg or Contra Costa power plants, except under the following conditions:
 - a. Whenever Pittsburg Unit 7 is committed, Pittsburg Unit 5 or 6 may operate at minimum load for the purpose of providing steam necessary to start or restart Pittsburg Unit 7.
 - b. The Discharger may remove Pittsburg Unit 7 from service for emergency or unscheduled maintenance, for personnel or equipment safety, or for the reliability of the system.
 - c. The Discharger may have Pittsburg Unit 7 at less than full available load when other committed units are dispatched above minimum load if necessary to meet system stability, personnel or equipment safety, and to respond to system transient conditions.
 - d. When generation from Pittsburg Unit 7 is not needed, the Discharger may have one unit in operation at Pittsburg and/or Contra Costa without dispatching Pittsburg Unit 7 if necessary to maintain system reliability according to prudent utility operating practice, including personnel and equipment safety, or to provide steam supply.
2. The Discharger shall minimize the commitment and dispatch of all units at PPP, except for the preferential operation of Pittsburg Unit 7, and of all units at CCPP to minimize cooling water flows unless commitment and dispatching of these units is necessary to meet system demand, to meet power pool commitments, and/or to maintain system reliability according to prudent utility operating practice, including equipment and personnel safety.
3. All committed units at PPP and CCPP (other than Pittsburg Unit 7) must be dispatched to the level at which the unit discharge temperatures equal 86°F before the discharge temperature for any similar unit is allowed to exceed 86°F unless the unit is located at a plant which has fish densities below the threshold level as demonstrated by the SBMP's threshold monitoring component.

4. The Discharger shall schedule Pittsburg Unit 7 overhauls so that work shall not occur between 1 May and 15 July each year.
5. The Discharger shall minimize circulation water flows under all conditions, except during chlorination, while maintaining discharge temperatures pursuant to Provision 1.c. The Discharger shall use the variable speed pumps whenever the units operate at reduced loads, in accordance with design parameters. Reduced load is defined as less than 95% of maximum load for the existing variable speed pumps. The Discharger shall shut off circulation water for uncommitted units as soon as possible, except as required according to prudent operating practices to ensure personnel and equipment safety.
6. The Discharger entered into a new agreement on 13 July 1995 with the CDFG that covers striped bass mitigation and/or monitoring. The Discharger shall continue to comply with provisions of this agreement until a new one is negotiated with CDFG.
7. The Discharger shall rotate and clean intake screen assemblies for all screen assemblies in operation at a frequency of not less than once every four hours for the purpose of maintaining intake water velocities as close as practicable to design levels.
8. The Discharger shall take appropriate measures as necessary to maintain bar rack velocities as close as practicable to design levels. Appropriate measures include routinely rotating and cleaning screen assemblies every four hours and may include dredging sand and silt to eliminate buildup in front of the intake structures.

Post Entrainment BTA Report

The Discharger shall submit a post entrainment BTA Report to the Boards on January 31 each year, which shall include an evaluation of the previous period's Resources Management Program performance. The following data shall be collected and shall be available to the Boards upon the request of the Executive Officers:

1. Each unit's hourly cooling water flow for each day of the entrainment period.
2. Hourly temperature measurements in the discharges of Pittsburg Units 1-4, Pittsburg Unit 5 and Pittsburg Unit 6, Contra Costa Unit 6 and Contra Costa Unit 7 for each day of the entrainment period.
3. Hourly records of gross electrical generation (MW) for each unit at the PPP and CCPP (excluding house units) during the entrainment period.

The BTA report shall include, but not necessarily be limited to the following:

1. A tabulation of outages and curtailments for Pittsburg Unit 7 by occurrence with a brief description of the cause of each occurrence during the previous entrainment period.
2. A comparison of hourly electrical generation by Unit, at CCPP Units 6&7 and Pittsburg Units 1-6 with the generation at Pittsburg Unit 7 (expressed as a percentage of the available capacity) during the previous entrainment period as it pertains to compliance with provisions of the Resources Management Program.
3. A summary of information used to determine the start and end date of the entrainment period, if Threshold Monitoring Program is implemented/
4. A summary of monthly capacity factors and generation by unit for the PPP and CCPP and monthly cooling water flow by unit group as in A.2 for the preceding entrainment period.
5. An annual BTA compliance summary including:
 - a. compliance with the Resources Management Program,
 - b. status of intake improvements or modifications, if any, and
 - c. a summary of intake screen operation (rotation frequency) at the PPP and CCPP during the previous calendar year.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
1515 CLAY STREET, SUITE 1400
OAKLAND, CA 94612
(510) 622 - 2300 ♦ Fax: (510) 622 - 2460

FACT SHEET
for

NPDES PERMIT and WASTE DISCHARGE REQUIREMENTS for
MIRANT DELTA LLC
PITTSBURG POWER PLANT
PITTSBURG, CONTRA COSTA COUNTY
NPDES Permit No. CA0004880

PUBLIC NOTICE:

Written Comments

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments should be submitted to the Regional Board no later than 5:00 p.m. on May 13, 2002.
- Send to ATTN: Judy C. Huang

Public Hearing

- The draft permit will be considered for adoption by the Board at a public hearing during the Board's regular monthly meeting at: Elihu Harris State Office Building, 1515 Clay Street, Oakland, CA; 1st floor Auditorium.
- This meeting will be held on: June 19, 2002, starting at 9:00 am.

Additional Information

- For additional information about this matter, interested persons should contact Regional Board staff member: Ms. Judy C. Huang, Phone: (510) 622-2363; email: jch@rb2.swrcb.ca.gov

This Fact Sheet contains information regarding an application for waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit for Mirant Delta LLC for discharges from the Pittsburg Power Plant. The Fact Sheet describes the factual, legal, and methodological basis for the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the limits.

I. INTRODUCTION

Mirant Delta LLC (hereinafter the **Discharger**) applied to the California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter the **Board**) for reissuance of its NPDES permit for discharge of pollutants from Pittsburg Power Plant into State Waters.

The Discharger owns and operates the Pittsburg Power Plant, located at 696 West 10th Street, Pittsburg, Contra Costa County.

Treated wastewater is discharged into Suisun Bay, and Willow Creek, all Waters of the State and United States. The wastewater, is discharged through 11 shoreline outfalls. The Discharger has not requested dilution credits for any of the Discharges. These discharge points are as follows:

Outfall Number	Discharge Description	Latitude	Longitude	Receiving Water
E-001	Once-Through Cooling Water Discharge (Units 1 through 6), Unit 7 Cooling Tower Blowdown, and other low volume wastes	38°02'30"	121°53'30"	Suisun Bay
E-002	Yard Storm Drain (Discharge Eliminated)			
E-003	Stormwater runoff from yard drains in Fuel Oil Tanks 8 through 14 during peak storm flows	38°02'15"	121°54'00"	Willow Creek
E-004	Stormwater runoff from yard drains around Fuel Oil Tank 16 during peak storm flows	38°01'45"	121°54'00"	Willow Creek
E-005A	Stormwater runoff from yard drains near Cooling Water Intake	38°02'30"	121°53'30"	Suisun Bay
E-005B	Stormwater runoff from yard drains near Cooling Water Intake	38°02'30"	121°53'45"	Suisun Bay
E-006	Unit 7 Cooling Tower Blowdown alternate discharge location	38°02'15"	121°54'15"	Willow Creek
E-007	Stormwater runoff from yard drains around area southwest of Warehouse and portions of the PG&E Switchyard	38°02'15"	121°54'00"	Willow Creek
E-008	Stormwater runoff from yard drains around area west of Warehouse	38°02'15"	121°54'00"	Willow Creek
E-009	Stormwater runoff from PG&E switchyard and adjacent Mirant property	38°02'15"	121°54'00"	Willow Creek
E-010	Stormwater runoff from entrance road area between Fuel Oil Tanks 14 and 15	38°02'00"	121°54'00"	Willow Creek
E-011	Stormwater runoff from Pump Station area near Fuel Oil Tank 16	38°02'00"	121°54'00"	Willow Creek

Discharge Description and volume: The Report of Waste Discharge describes the discharge as follows:

Outfall Number	Contributory Waste Stream	Treatment Description	Annual Average Flow (MGD)	Annual Maximum Flow (MGD)
E-001	Once-Through Cooling Water Discharge (Units 1-6)	Screening, Shock Chlorination (and Dechlorination, if required)	658	1,070
	A. Intake Screen Wash	Screening	0.15	7.27
	B. Water Pretreatment System	Sedimentation/ Microstraining	0.12	0.17
		Reverse Osmosis Building Drains	0.004	
	C. Reverse Osmosis Reject	Microstraining	0.28	0.360
	D. Boilers 1 through 6 Blowdown	Microstraining (filtration)	0.15	0.300

Outfall Number	Contributory Waste Stream	Treatment Description	Annual Average Flow (MGD)	Annual Maximum Flow (MGD)
	E. Ion Exchange Regeneration Waste ¹	Neutralization	0.07	0.648
	F. Settling Pond Effluent from Fireside/Air Preheater Washes (Boilers 1 through 7)	PH Adjustment Sedimentation Filtration	0.0027	0.036
	G. Oil-Water Separator Effluent from yard and building stormwater runoff	Oil-Water Separation / Sedimentation	0.30	0.576
	H. Unit 7 Cooling Tower Blowdown	Chlorination / Anti-scalant	17	17.0
	I. Chemical Metal Cleaning Waste Pond Effluent (Boilers 1 through 7)	Sedimentation / Neutralization / Microstraining	0.0027	0.047
E-002	Yard Storm Drain (Discharge Eliminated)			
E-003	Stormwater runoff from yard drains around Fuel Oil Tanks 8 through 14 during peak storm flows	Best Management Practices	0.048	--
E-004	Stormwater runoff from yard drains around Fuel Oil Tank 16 during peak storm flows	Best Management Practices	0.005	--
E-005	Stormwater runoff from yard drains near Cooling Water Intake	Best Management Practices	0.0002	--
E-006	Unit 7 Cooling Tower Blowdown Alternate Discharge Location	Chlorination/ Anti-scalant	No Estimate	--
E-007	Stormwater runoff from yard drains in area southwest of Warehouse	Best Management Practices	No Estimate	--
E-008	Stormwater runoff from yard drains in area west of Warehouse	Best Management Practices	No Estimate	--
E-009	Stormwater runoff from PG&E Switchyard and the adjacent Mirant property	Best Management Practices	No Estimate	--
E-010	Stormwater runoff from entrance road area between Fuel Oil Tanks 14 and 15	Best Management Practices	No Estimate	--
E-011	Stormwater runoff from Pump Station area near Fuel Oil Tank 16	Best Management Practices	No Estimate	--

The U.S. Environmental Protection Agency (hereinafter the U.S. EPA) and the Board have classified Pittsburg Power Plant as a major Discharger.

The receiving waters for the subject discharges are the waters of Suisun Bay and are tidally-influenced waters of the San Francisco Bay estuary. This Order uses the CTR basis for establishing the salinity characteristics (i.e., fresh water vs. marine water) of the receiving water for all WQO/WQC because the CTR basis for salinity is more scientifically justified than the Basin Plan

¹ A portable offsite regeneration system is planned to treat reclamation wastewater generated from the new process. Portable off-site regenerated mixed bed demineralizers are planned to polish the second pass permeate to boiler makeup water quality.

salinity basis. Therefore, the freshwater objectives apply to discharges to waters with salinities lower than 1 parts per thousand (ppt) at least 95 percent of the time, while marine (saltwater) objectives apply to discharges to waters with salinities greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to waters with salinities in between these two categories, or to tidally influenced fresh waters that support estuarine beneficial uses, effluent limitations shall be the lower of the marine or freshwater effluent limitation, based on ambient hardness, for each substance. Salinity data indicate that the receiving waters for the subject discharge are estuarine according to both the Basin Plan and CTR definition of salinity.

II. DESCRIPTION OF EFFLUENT

Board Order Nos. 95-225 (hereinafter the Previous Order) presently regulates the discharge from the power plant. Based on the effluent data collected between January 1999 and December 2001, the Discharger's combined Unit 1 through 7 treated wastewater has the following characteristics:

Table A. Summary of Combined Unit 1 through 7 Effluent Data

Constituent	Maximum Observed
Cooling Water Temperature (°F)	106
Arsenic (µg/l)	6.4
Cadmium (µg/l)	<0.02
Chromium (µg/l)	14
Copper (µg/l)	19
Lead (µg/l)	2.7
Mercury (µg/l)	0.16
Nickel (µg/l)	17
Silver (µg/l)	0.033
Zinc (µg/l)	23

No toxic pollutant data for the existing discharges E-003 through E-011 are currently available. Discharge E-002 was eliminated.

III. GENERAL RATIONALE

The following documents are the bases for the requirements contained in the proposed Order, and are referred to under the specific rationale section of this Fact Sheet.

- Federal Water Pollution Control Act, as amended (hereinafter the **CWA**).
- Federal Code of Regulations, Title 40 - Protection of Environment, Chapter 1, Environmental Protection Agency, Subchapter D, Water Programs, Parts 122-129, and 423 (hereinafter referred to as 40 CFR specific part number).
- Water Quality Control Plan, San Francisco Bay Basin, adopted by the Board on June 21, 1995 (hereinafter the **Basin Plan**). The California State Water Resources Control Board (hereinafter the **State Board**) approved the Basin Plan on July 20, 1995 and by California State Office of Administrative Law approved it on November 13, 1995. The Basin Plan defines beneficial uses and contains water quality objectives (WQOs) for waters of the State, including Suisun Bay.

- California Toxics Rules, Federal Register, Vol. 65, No. 97, May 18, 2000 (hereinafter the **CTR**).
- National Toxics Rules 57 FR 60848, December 22, 1992, as amended (hereinafter the **NTR**).
- State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, May 1, 2000 (hereinafter the **State Implementation Policy**, or **SIP**).
- Quality Criteria for Water, U.S. EPA 440/5-86-001, 1986.
- Water Quality Control Plan for control of Temperature in the Coastal Interstate Waters and Enclosed Bays and Estuaries of California (hereinafter the **Thermal Plan**) adopted by the State Board on September 18, 1975.

IV. SPECIFIC RATIONALE

Several specific factors affecting the development of limitations and requirements in the proposed Order are discussed as follows:

1. Recent Plant Performance

Section 402(o) of CWA and 40 CFR 122.44(l) require that water-quality based effluent limits (**WQBELs**) in re-issued permits are at least as stringent as in the previous permit. SIP specifies that interim effluent limitations must be based on current treatment facility performance or on existing permit limitations whichever is more stringent. In determining what constitutes "recent plant performance", best professional judgment (**BPJ**) was used. Effluent monitoring data collected between January 1999 and December 2001 are considered representative of the recent plant performance.

2. Impaired Water Bodies in 303(d) List

The U.S. EPA Region 9 office approved the State's 303(d) list of impaired waterbodies on May 12, 1999. The list was prepared in accordance with section 303(d) of the CWA to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Suisun Bay is listed for chlordane, copper, DDT, diazinon, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, nickel, PCBs, (including dioxin-like PCBs), and selenium.

The SIP requires final effluent limits for all 303(d)-listed pollutants to be based on total maximum daily loads (**TMDL**) and wasteload allocation (**WLA**) results. The SIP and federal regulations also require that final concentration limits be included for all pollutants with reasonable potential (**RP**). The SIP requires that where the Discharger has demonstrated infeasibility to meet the final limits, interim concentration limits and performance-based mass limits for bioaccumulative pollutants, be established in the permit with a compliance schedule in effect until final effluent limits are adopted. The SIP also requires the inclusion of appropriate provisions for waste minimization and source control.

3. State Thermal Plan and Clean Water Act Section 316(a)

On September 18, 1975, the State Board adopted the *Water Quality Control Plan for Control of Temperature in the Coastal Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan). The Thermal Plan contains objectives governing cooling water discharges. The Thermal Plan provides different and specific numeric and narrative water quality objectives for

“new” and “existing” discharges of heat. The Thermal Plan applies to discharges E-001 and E-006.

Discharges from Pittsburg Power Plant are considered existing discharges within the meaning of the Thermal Plan. The Thermal Plan requires the following for existing thermal waste discharges:

- The maximum temperature of the thermal waste shall not exceed the natural receiving water temperature by more than 20°F.
- Thermal waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.
- No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.
- The maximum temperature of thermal waste discharges shall not exceed 86°F.

The Thermal Plan provides that with the concurrence from the State Board, Regional Boards may grant exceptions to the Specific Water Quality Objectives of the Thermal Plan in accordance with Clean Water Act Section 316(a) (33 U.S.C. Section 1326) and applicable federal regulations. The Discharger has requested that the Board consider and grant an exception to the requirements listed in Findings 17.a, 17.c, and 17.d for discharge E-001.

Clean Water Act Section 316(a) provides that an exception will be granted if the Discharger can demonstrate, to the satisfaction of the Board, that an effluent limitation for heat is more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made. If the exception is granted, the Board will adopt an alternative effluent limitation, taking into account the interaction of the heat component of the discharge with other pollutants, that will protect the receiving water.

Title 40, Code of Federal Regulations, Section 125.73(a) addresses the implementation of Clean Water Act Section 316(a) exception. It states that *“Thermal discharge effluent limitations or standards established in permits may be less stringent than those required by applicable standards and limitations if the discharger demonstrates to the satisfaction of the director that such effluent limitations are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. This demonstration must show that the alternative effluent limitation desired by the discharger, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made.”*

Pittsburg Power Plant Units 1 through 4 have been in operation since 1954. Units 5 and 6 came online in 1960 and 1961, respectively. Unit 7 came online in 1972. The Pittsburg Power Plant has been in operation in its current facility design and discharge configuration since 1972. Since 1977, the Pittsburg Power Plant has been granted Thermal Plan exemptions with the following alternative effluent and receiving water limits:

- The maximum temperature of the discharge at flood tide shall not exceed the natural receiving water temperature by more than 28°F (15.6°C); and

- The discharge of E-001 shall not cause more than 125 acres of surface water to rise to a temperature greater than 4°F above the natural temperature of the receiving water.

Pacific Gas and Electric Company (PG&E), the former owner and operator of the Pittsburg Power Plant requested an exception to the Thermal Plan and submitted reports in 1976, 1977, and 1992 to comply with Section 316(a) of the Clean Water Act. The purpose of these studies are to assess the thermal effects of the discharge on the beneficial uses of the receiving water. These assessments include field studies of the health, behavior and propagation patterns of affected fish and macroinvertebrate species, both in the discharge and at a reference site. The study site conditions include all environmental stressors that might be present at the reference site plus elevated temperature. Because the species studied in the discharge plume are exposed to the thermal stressors and all other existing environmental stressors in the discharge, the Thermal Effects studies considered cumulative impacts of both thermal and other stressors on the affected species. The studies showed that the discharge had no adverse impact or appreciable harm on any of the anadromous fish or other aquatic species inhabiting the area and that beneficial uses were protected. The California Department of Fish and Game (CDFG) and the National Marine Fisheries Service (NMFS) concurred with these conclusions in letters sent to the Executive Officer.

There has been no significant changes in Pittsburg Power Plant's power generation process and operation procedures in the last ten years. In addition, based on data gathered at RMP stations near the discharge and influent sampling data, the quality of the receiving water has not change considerably. Therefore, the findings and conclusions of the Thermal Effect Study is still applicable to the discharge.

Based on the studies referenced above, the lack of changed circumstances, and the fact that the Pittsburg Power Plant has discharged into Suisun Bay for the past 10 years with no adverse impact or appreciable harm on any of the anadromous fish or other aquatic species inhabiting the area, the Board concludes that selected effluent limitations in the Thermal Plan are more stringent than necessary to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on Suisun Bay. Therefore, the Board grants an exception to discharge E-001 under Section 316(a) of the Clean Water Act from the following effluent limitations of the Thermal Plan:

- No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving water at any time or place
- The maximum discharge temperature shall not exceed the natural receiving water temperature by more than 20°F.
- The maximum temperature of thermal waste discharges shall not exceed 86°F.

Prior to becoming effective, the above referenced exemptions and alternatives with requirement less stringent than those of the Thermal Plan must receive the concurrence of the State Board.

4. Clean Water Act Section 316(b) - Entrainment

Section 316(b) of the Clean Water Act 933 U.S.C Section 1326(b)) requires that the location, design, construction, and capacity of cooling water intake structures reflect Best Technology Available (hereafter BTA) for minimizing adverse environmental impacts.

The impact of the Discharger's intake cooling water system is a function of the number of organisms entrained (drawn into the cooling water system) and impinged (drawn against the intake screens).

The cooling water system intakes for Pittsburg Power Plant are in the nursery area for striped bass, which has been the principal organism of concern. However, recent listings of Delta smelt, Sacramento River winter-run Chinook Salmon, Central Valley spring-run Evolutionary Significant Unit (ESU) Chinook Salmon, Central Valley ESU Steelhead, and the Sacramento Splittail under the state and federal Endangered Species Act (ESA) have resulted in more attention being focused on these species. Young striped bass and other fish and invertebrates are entrained in the cooling system and are subjected to mechanical and thermal stress. Most of the Striped Bass losses occur in approximately a 75-day period between May and mid-July called the entrainment period.

In June 1986, the Board adopted Order No. 86-47. In that Order, the Board agreed to PG&E's proposed means of meeting the BTA requirements for intake structures. As described in that Order, PG&E implemented a Resources Management Program, improved intake structures, and stocked hatchery bass in the Delta. BTA for subsequent NPDES permits for the Pittsburg Power Plant continued to include the maintenance of intake structures, and the implementation of Resources Management Program and fish replacement program. The present Permit continues to define BTA as maintaining intake structures and the Resources Management Program (Attachment F).

In a report dated January 1, 1992, PG&E summarized the result of a re-evaluation of intake screen technology. This study was conducted to fulfill CWA Section 316(b) requirements. The study showed that there have been no technological improvements that could be applied to the cooling water system that would achieve substantial reductions in fish losses beyond those already achieved by the present BTA program. This study re-evaluation was conducted in consultation with CDFG, U.S. Fish and Wildlife Service (USFWS), and NMFS.

Because of the potential to take Delta smelt, Winter-run Chinook salmon and other aquatic species, Mirant submitted applications for incidental take permits to the USFWS and NMFS for species under their jurisdiction. In addition, PG&E applied for and received incidental take coverage from CDFG, in the form of a Memorandum of Understanding, for purposes of species potentially subject to take under the California ESA. The incidental take authorizations will be administered by these agencies under the federal and state ESAs and are not included in this Order.

Mirant is currently developing, in cooperation and consultation with USFWS, NMFS, and CDFG, a comprehensive and integrated Conservation Program for the Pittsburg and Contra Costa Power Plants (collectively, the "Plants") intended to conserve certain fish and wildlife and minimize, to the maximum extent practicable, the impact of the operation of the Plants on certain species of fish and wildlife. The Conservation Program involves:

- (a) The proposed deployment, operation, maintenance, repair, and evaluation of an Aquatic Filter Barrier (AFB). The AFB will first be tested at the Contra Costa Power Plant. The AFB will only be deployed at the Pittsburg Power Plant, if the test is successful at the Contra Costa Power Plant.
- (b) The use of Variable Speed Drive (VSD) Program (20% reduction in circulating water intake and discharge based on design values on a 7-day running average) at the Pittsburg Power Plant during the February through July period when larval fishes are typically abundant in the

- Delta. In addition, the VSD Program will also be used as a backup at the Contra Costa Power Plant while the AFB is evaluated; and
- (c) The conservation, protection, and enhancement of aquatic and terrestrial habitat at the Montezuma Enhancement Site, located on the north shore of Suisun Bay about 1 mile east of Collinsville and roughly equidistant from the Plants.

Several other conservation measures would also be implemented. The Conservation Program is described in a draft Multi-species Conservation Plan (CP) developed under Section 10 of the ESA. The CP also evaluated several alternatives to minimize the impacts of the operation of the Plants on fish and wildlife and the preferred alternative (i.e., BTA) was continued operation of once-through cooling systems with the implementation of the conservation program. USFWS and NMFS requested the Discharger expedite the implementation of the conservation program by submitting applications necessary for its implementation with the U.S. Army Corps of Engineers (the "Corps"). Mirant has applied and USFWS and NMFS are currently conducting ESA Section 7 consultations with the Corps that would, in effect implement the conservation program. The Section 7 consultation is expected to result in the issuance of incidental take statements that will provide take authorization for the operation of the Plants and the implementation of the conservation program. Mirant's CP notes that if the AFB technology performs as expected, entrainment of larval and juvenile fish may be reduced by as much as 80 to 99%. Mirant is also applying to CDFG to implement the conservation program under incidental take authorization as provided by the California ESA. Once approved, this authorization would replace Mirant's current incidental take authorization provided by a Memorandum of Understanding with CDFG.

Based on the above-referenced CWA 316(b) study, the existing intake structure is the best intake technology available. However, in view of the consultation process and the status of Mirant's CP, the BTA may change based on the outcome of the consultation process and implementation of Mirant's conservation program. Unless the AFB is determined ineffective at the Contra Costa Power Plant, it will subsequently be deployed, operated, maintained, repaired, monitored, and evaluated at the Pittsburg Power Plant. The VSD program with attendant reduced flows or compensatory mitigation will be implemented at the Pittsburg Power Plant until the AFB is deployed and operated. BTA will, in such event, be represented by the conservation program endorsed by USFWS and NMFS through the ESA Section 7 consultation process. This BTA will replace the Resources Management Program currently set forth in Attachment F, which is the current BTA.

This Order includes a Provision requiring the Discharger to implement the conservation program when it has been developed by the ESA consultation process. If the cost of implementing any alternative for achieving BTA is wholly disproportionate to the environmental benefits to be achieved, the Board may consider alternative methods to mitigate these adverse environmental impacts.

Since the intake structure may be changed and its effect on entrainment and impingement will be different from that of the 1992 study, this Order contains a provision requiring the Discharger to conduct a new 316(b) study after the implementation and reliable operation of the new intake technologies.

If the ESA consultation process determines that the CP should be implemented, then these new BTAs are available and Discharger is required to implement them. If the cost of implementing any alternative for achieving BTA is wholly disproportionate to the environmental benefits to be achieved, the Board may consider alternative methods to mitigate these adverse environmental impacts.

5. New Information in Integrated Risk Information System (IRIS)

U.S. EPA uses updated reference doses or potency values to derive the water quality criteria (WQCs) for some of the pollutants in the CTR. These updated potency or reference dose values, which are available in IRIS, may affect the resulting effluent limitations that are based on the corresponding WQCs.

6. Basis for Prohibitions

- a) Prohibition A.1 (no discharges other than as described in the permit): This prohibition is based on the Basin Plan, previous permit and BPJ.
- b) Prohibition A.2 (no stormwater pollution, toxic and deleterious substances, contamination): This prohibition is based on the Basin Plan to protect beneficial uses of the receiving water from un-permitted discharges, and the intent of sections 13260 through 13264 of the Porter-Cologne Water Quality Act (California Water Code) relating to the discharge of waste to State Waters without filing for and being issued a permit.

7. Basis for Effluent Limitations

- a) Effluent Limitations B.1.a (pH): The pH limit is based on the Basin Plan and 40 CFR 133.102.
- b) Effluent Limitation B.1.b (Chlorine Residual): The chlorine residual limit is based on the Basin Plan.
- c) Effluent Limitation B.1.c (Temperature): The temperature limit is based on previous permit.
- d) Effluent Limitation B.1.d (PCB): The prohibition of PCB discharge is based on previous permit and 40 CFR 423.
- e) Effluent Limitation B.2 through B.6 (BAT Limitations for Low Volume Wastes): These effluent limitations are based on 40 CFR 423.
- f) Effluent Limitation B.7 – Whole Effluent Toxicity: The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community ecology, or receiving water biota. These effluent toxicity limits are necessary to ensure that this objective is protected. The acute toxicity limit is based on the Basin Plan.
- g) Effluent Limitation B.8 – Toxic Substances:
 - 1. Reasonable Potential Analysis (RPA):
40 CFR 122.44(d)(1)(i) specifies that permits are required to include water quality based effluent limits (WQBEL) for all pollutants “which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard”. Thus, the fundamental step in determining whether or not a WQBEL is required is to assess a

pollutant's reasonable potential of excursion of its applicable water quality objective or criterion. The following section describes the reasonable potential analysis and the results of such an analysis for the pollutants identified in the Basin Plan and the CTR.

- i) *WQOs and WQCs*: The RPA involves the comparison of effluent data with appropriate WQOs including narrative toxicity objectives in the Basin Plan, applicable WQCs in the CTR/NTR, and U.S. EPA's 1986 Quality Criteria for Water. The Basin Plan objectives and CTR criteria are shown in **Table 1** of this Fact Sheet.
- ii) *Methodology*: RPA is conducted using the method and procedures prescribed in Section 1.3 of the SIP. Board staff and the Discharger have analyzed the effluent data to determine if the discharge had reasonable potential to cause or contribute to exceedances of applicable WQOs or WQCs. **Table 2** of this Fact Sheet shows the step-wise process described in Section 1.3 of the SIP. There is not sufficient data to conduct RPA for organics, selenium, and cyanide.
- iii) *Background data*: The RPA used background data collected by the RMP from at the Sacramento River Station 1993 - 2000 (see **Table 3** of this Fact Sheet) for metals, pesticides, and PAHs.
- iv) *RPA determination*: The RPA results are shown below. Pollutants that tested positively for RP were copper, lead, mercury, nickel, zinc and dieldrin.

Table B. Summary of Reasonable Potential Results

Constituent ¹	WQO (µg/L)	Basis ²	E-001 MEC (µg/L)	Maximum Ambient Background Conc. (µg/L)	Reasonable Potential
Arsenic	36	BP	6.4	3.65	No
Cadmium	0.7	BP	<0.02	0.06	No
Chromium	11	BP	14	80.37	Yes
Copper*	3.7	CTR, T=0.83	19	9.9	Yes
Lead	1.4	BP, H=52 mg/L CaCO ₃	2.7	2.35	Yes
Mercury*	0.012	BP	0.16	0.038	Yes
Nickel*	7.1	BP	17	21.8	Yes
Silver	1.3	BP	0.033	0.057	No
Zinc	58	BP	23	18.2	No
DDE	0.00059	CTR	No data	0.0009	Yes
Dieldrin	0.00014	CTR	No data	0.0002	Yes
CTR Pollutant Nos. 10, 14, 16 ³ , and 17 to 126	Various	CTR and BP	No data	Various	Cannot Determine, No Data Available

1. *Constituents on 303(d) list.

2. BP = Basin Plan; CTR = California Toxics Rule; T = translator to convert dissolved to total copper, H = Hardness, default value = 100 mg/L CaCO₃.

3. Although the CTR criterion for dioxin is for 2,3,7,8-TCDD only, the Board determines reasonable potential for Dioxin TEQ because of the U.S. EPA's listing of San Francisco Bay as impaired by these compounds. Dioxin TEQ includes all 17 dioxin and furan congeners of 2,3,7,8-TCDD using the 1998 World Health Organization factors.
- v) *Constituents with limited data*: Reasonable potential could not be determined for organic priority or toxic pollutants, and cyanide because of the absence of sufficient effluent data. The Discharger is required to initiate or continue to monitor for those pollutants in this category using analytical methods that provide the best detection limits reasonably feasible. If detection limits improve to the point where it is feasible to evaluate compliance with applicable water quality criteria, these pollutants' RPA will be reevaluated in the future to determine whether there is a need to add numeric effluent limits to the permit or to continue monitoring.
 - vi) *Pollutants with no reasonable potential*: WQBEL effluent limits are not included in the Order for constituents that do not have reasonable potential to cause or contribute to exceedance of applicable water quality objectives. However, monitoring for those pollutants is still required, as specified in a California Water Code Section 13267 letter, dated August 6, 2001 issued to the Discharger. If concentrations or mass loads of these constituents were found to have increased significantly, the Discharger will be required to investigate the source(s) of the increase(s). Remedial measures are required if the increases pose a threat to water quality in the receiving water.
 - vii) *Permit Reopener*: The permit includes a reopener provision to allow numeric effluent limits to be added for any constituent that in the future exhibits reasonable potential to cause or contribute to exceedance of a water quality objective. This determination, based on monitoring results, will be made by the Board.
2. **Final Water Quality-Based Effluent Limits (WQBELs)**: The final effluent limitations in the Permit's Table 4, attached, Toxic Substances, are water quality-based. They were developed and set for the toxic and priority pollutants that were determined to have reasonable potential. Final effluent limitations were calculated based on appropriate WQOs, background concentrations at Sacramento River RMP Station, and the appropriate procedures specified in Section 1.4 of the SIP. For the purpose of the Proposed Order, final WQBELs refer to all non-interim effluent limitations. The WQO used for each pollutant with RP is indicated in Table C, below, as well as in Table 1, attached (WQOs).

TABLE C. Water Quality Objectives/Criteria for Pollutants with RP

Pollutant	Human Health WQO (µg/L)	Chronic WQO (µg/L)	Acute WQO (µg/L)	Basis of Lowest WQO Used in RP
Chromium		11	16	Basin Plan
Copper		3.7	5.8	CTR
Lead		1.38	53.5	Basin Plan

Pollutant	Human Health WQO (µg/L)	Chronic WQO (µg/L)	Acute WQO (µg/L)	Basis of Lowest WQO Used in RP
Mercury		0.012	2.1	Basin Plan
Nickel		7.1	140	Basin Plan
DDE	0.00059			CTR
Dieldrin	0.00014		-	CTR

3. This Order sets interim limits for chromium, copper, lead, mercury, and nickel. The interim limit for chromium, lead, mercury and nickel are based on the maximum observed effluent concentration because the previous permit contains no effluent limits for these constituents and that facility performance based concentration limits cannot be calculated for these constituents due to the variability of the data and the number of non-detects. The interim limit for copper is based on past facility performance because there is no previous permit limit for copper (**Table 5**).
4. Intake Credits: Discharger appears to be a likely candidate for intake credits pursuant to Section 1.4.4 of the SIP. However, Discharger has submitted a report, Analysis and NPDES Data for Proposed WQBELs (May 13, 2002), concluding that the available data do not adequately represent the once-through cooling-water system, and the Regional Board is unable to apply intake credits at this time. Therefore, determination of intake credits, if appropriate, is deferred until a later permit cycle and this Permit contains interim limits based on current performance.
5. Compliance Schedules and Infeasibility Analysis
On May 20, 2002, the Discharger submitted feasibility studies which demonstrated according to the Basin Plan (page 4-14, Compliance Schedule) or SIP (Section 2.1, Compliance Schedule), it is infeasible to immediately comply with the WQBELs calculated according to Section 1.4 of the SIP for chromium, copper, lead, mercury, and nickel. Therefore, this permit establishes a five-year compliance schedule for final limits based on CTR or NTR criteria (i.e., copper) and a compliance schedule of March 31, 2010 for final limits based on the Basin Plan objectives (i.e., lead, mercury, and nickel). The five-year and March 31, 2010 compliance schedules both exceed the length of the permit, therefore, these calculated final limits are intended for point of reference for the feasibility demonstration. Additionally, the actual final WQBELs for copper, mercury, nickel, and selenium may be based on either SSOs or the TMDLs/WLAs.

Pursuant to the SIP (Section 2.2.2, Interim Requirements for Providing Data), where available data are insufficient to calculate a final effluent limit (e.g., cyanide), a data collection period of May 18, 2003 is established. This Order contains a provision requiring the Discharger to join a group study for data collection in the ambient background and to determine site-specific objectives. The Discharger is required to participate in the studies and submit reports to the Board by 2003. The Board intends to include, in a subsequent permit revision, a final limit based on the study results. However, if the Discharger requests and demonstrates that it is infeasible to comply with the revised final limit, the permit revision will establish a maximum five-year compliance schedule. During the compliance schedules, interim limits are included based on current treatment facility performance or on existing permit limits, whichever is more stringent to maintain existing water quality. The Board may take appropriate enforcement actions if interim limits and requirements are not met.

6. Further Discussion and Rationale for Mercury WQBELs and Mass-Based Effluent Limitations

As shown in the attached **Table 4**, attached (Limits), the calculated final average monthly and daily maximum effluent limits for mercury are 0.017 µg/L and 0.046 µg/L, respectively. Due to the limited data set of ultraclean mercury results for this Discharger, it is not possible to accurately predict its ability to immediately comply with these WQBELs. Therefore, based on Regional Board staff's Best Professional Judgment, it is appropriate to set an IPBL for mercury of 0.165 µg/L, based on maximum observed effluent concentration from January 1999 through December 2002.

The Order also includes an interim mercury mass-based effluent limitation of 9.8 kilograms per month. This mass-based effluent limitation is calculated as shown in **Table 6**, attached (Mercury Mass Limit), and is based on facility flow and mercury concentration data collected between January 1999 and December 2001. This mass-based effluent limitation will maintain current loadings until a TMDL is established. The final mass-based effluent limitation will likely be based on the WLA contained in the mercury TMDL.

7. Dieldrin and DDE have been found to have reasonable potential due their presence in background stations at levels exceeding water quality objectives. The background RMP data were not collected using U.S. EPA methods for dieldrin and no effluent data has been collected. This permit will require the Discharger to collect data and the permit may be reopened at a later date to establish limits for dieldrin and DDE.

8. Basis for Receiving Water Limitations

- a) Receiving water limitations C.1, C.2 and C.3 (conditions to be avoided): These limits are based on the previous Order and the narrative/numerical objectives contained in Chapters 2 and 3 of the Basin Plan
- b) Receiving water limitation C.4 (1°F temperature requirement): This requirement is based on the previous permit.
- c) Receiving water limitation C.5 (4°F temperature requirement): This requirement is based on the previous permit.

9. Basis for Provisions

- a) Provisions D.1. (Permit Effective Date, Permit Compliance, and Rescission of Previous Permit): Permit effective date is based on 40 CFR 124.15(b). Time of compliance is based on 40 CFR 122. The basis of this Order superseding and rescinding the previous permit order is 40 CFR 122.46.
- b) Provision D.2. (Thermal Study and Schedule): This provision, based on BPI, Section 316(a) of the Clean Water Act and Thermal Plan, requires the Discharger to conduct a receiving water beneficial use study to determine the thermal effects of the discharge.

- c) Provision D.3. (Entrainment/Impingement Study and Schedule): This provision, based on BPJ and Section 316(b) of the Clean Water Act, requires the Discharger to assess the appropriateness of the intake technology selected.
- d) Provision D.4 (Effluent Characterization for Selected Constituents): This provision is based on the Basin Plan and the SIP.
- e) Provision D.5 (Ambient Background Receiving Water Study): This provision is based on the Basin Plan and the SIP.
- f) Provision D.6. (Pollutant Prevention and Minimization Program): This provision is based on the Basin Plan and the SIP.
- g) Provision D.7. (Whole Effluent Acute Toxicity): This provision establishes conditions by which compliance with permit effluent limits for acute toxicity will be demonstrated. Conditions include the use of 96-hour static renewal bioassays for discharges to Suisun Bay, the use of fathead minnow and/or rainbow trout as the test species, and use of approved test methods as specified. These conditions are based on the effluent limits for acute toxicity given in the Basin Plan, Chapter 4, and BPJ.
- h) Provision D.8. (Regional Monitoring Program): This provision, which requires the Discharger to continue to participate in the Regional Monitoring Program, is based on the previous Order and the Basin Plan.
- i) Provision D.9. (Operations and Maintenance Manual, Review and Status Reports): This provision is based on the Basin Plan, requirements of 40 CFR 122 and the previous permit.
- j) Provision D.10 and 11. (Contingency Plan and Annual Status Reports): The Contingency Plan provision is based on the requirements stipulated in Board Resolution No. 74-10 and the previous permit. The Annual Status Reports are based on the previous permit and the Basin Plan.
- k) Provision D.12. (Stormwater Sampling and Reporting Requirements): This provision is based on Best Professional Judgment.
- l) Provision D.13. (New Water Quality Objectives): This provision allows future modification of the permit and permit effluent limits as necessary in response to updated water quality objectives that may be established in the future. This provision is based on 40 CFR 123.
- m) Provision D.14. (Resources Management Plan): This provision is based on Best Professional Judgment.
- n) Provision D.15. (Self-Monitoring Program Requirement): The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are given in the Self Monitoring Program (SMP) of the Permit. This provision requires compliance with the SMP, and is based on 40 CFR 122.44(i), 122.62, 122.63 and 124.5. The SMP is a standard requirement in almost all NPDES permits (including the Order) issued by the Board. In addition to containing definitions of terms, it specifies general sampling/analytical protocols and the requirements of reporting of spills, violations, and routine monitoring data in accordance with NPDES regulations, the California Water Code, and Board's policies. The SMP also contains sampling program specific for the

Discharger's facility. It defines the sampling stations and frequency, pollutants to be monitored, and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified. Additional constituents, for which no effluent limitations are established, are also required to be monitored to provide data for future determination of their reasonable potential of exceeding the applicable WQOs or WQCs in the receiving water.

- o) Provision D.16. (Standard Provisions and Reporting Requirements): The purpose of this provision is require compliance with the standard provisions and reporting requirements given in this Board's document titled, Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993, or any amendments thereafter. This document is included as part of the permit as an attachment of the permit. Where provisions or reporting requirements specified in the permit are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications given in the permit shall apply. The standard provisions and reporting requirements given in the above document are based on various state and federal regulations with specific references cited therein.
- p) Provision D.17. (Change in Control or Ownership): This provision is based on 40 CFR 122.61.
- q) Provision D.18 and 19. (Permit Reopener and NPDES Permit / U.S. EPA concurrence): This provision is based on 40 CFR 123.
- r) Provision D.20. (Permit Expiration and Reapplication): This provision is based on 40 CFR 122.46 (a).

V. WASTE DISCHARGE REQUIREMENT APPEALS

Any person may petition the State Water Resources Control Board to review the decision of the Board regarding the Waste Discharge Requirements. A petition must be made within 30 days of the Board public hearing.

Attachments:

Attachment I: List of Tables

- Table 1 – Basin Plan Water-Quality Objectives and CTR Water-Quality Criteria
- Table 2 – Reasonable Potential Analysis
- Table 3 – Background Data for RPA Determination
- Table 4 – Final Effluent Limit Calculation
- Table 5 - Interim Limit Calculation
- Table 6 - Mercury Mass Limit Calculation

Table 1 - Basin Plan Water Quality Objectives and California Toxics Rule (CTR) Water Quality Criteria

	Constituent name	Basin Plan Objectives (ug/L)- Regional Board 2								CTR Water Quality Criteria (ug/L)					
		Freshwater (from Table 3-4)				Saltwater (from Table 3-3)				Freshwater		Saltwater		Human Health	
		4-day	1-hr	24-hr	Max	4-day	1-hr	24-hr	Max	CMC	CCC	CMC	CCC	Organisms only	
1	Antimony														4,300
2	Arsenic ^b	190	360			36	69			340	150	69	36		
3	Beryllium														
4	Cadmium ^b	0.70	1.90			9.3	43			1.10	0.20	42.25	9.36		
5a	Chromium (III)									1016.4	121.2				
5b	Chromium (VI) ^b	11	16			60	1,100			#REF!	11.4	1107.8	50.4		
6	Copper (303d listed) ^c	6.76	9.57			4.9				7.6	5.3	5.8	3.7		
7	Lead ^b	1.4	35.5			5.6	140			35.50	1.40	220.82	8.52		
8	Mercury (303d listed) ^b	0.025	2.4			0.025	2.1								0.051
9	Nickel ^b	90.7	815.6	56	1,100			7.1	140	269.80	30.00	74.75	8.28		4,600
10	Selenium (303d listed) ^b									20	5	290.6	71.1		
11	Silver ^b				1.31				2.3	1.30		2.24			
12	Thallium														6.3
13	Zinc ^b	60.90	67.24	58	170			58	170	68.80	68.80	95.14	85.62		
14	Cyanide ^b	5.2	22				5			22	5	1	1		220,000
15	Asbestos														
16	2,3,7,8 TCDD (303d listed)														0.000000014
17	Acrolein														780
18	Acrylonitrile														0.66
19	Benzene														71
20	Bromoform														360
21	Carbon Tetrachloride														4.4
22	Chlorobenzene														21,000
23	Chlorodibromomethane														34
24	Chloroethane														
25	2-Chloroethylvinyl ether														
26	Chloroform														
27	Dichlorobromomethane														46
28	1,1-Dichloroethane														
29	1,2-Dichloroethane														99
30	1,1-Dichloroethylene														3.2
31	1,2-Dichloropropane														39
32	1,3-Dichloropropylene														1,700
33	Ethylbenzene														29,000
34	Methyl Bromide														4,000
35	Methyl Chloride														
36	Methylene Chloride														1,600
37	1,1,2,2-Tetrachloroethane														11
38	Tetrachloroethylene														8.85
39	Toluene														200,000
40	1,2-Trans-Dichloroethylene														140,000
41	1,1,1-Trichloroethane														
42	1,1,2-Trichloroethane														42
43	Trichloroethylene														81
44	Vinyl Chloride														525
45	2-Chlorophenol														400
46	2,4-Dichlorophenol														790
47	2,4-Dimethylphenol														2,300
48	2-Methyl- 4,6-Dinitrophenol														765
49	2,4-Dinitrophenol														14,000
50	2-Nitrophenol														
51	4-Nitrophenol														
52	3-Methyl 4-Chlorophenol														
53	Pentachlorophenol									19	15	13	7.9		8.2
54	Phenol														4,600,000
55	2,4,6-Trichlorophenol														6.5
56	Acenaphthene														2,700
57	Acenaphthylene														
58	Anthracene														110,000
59	Benzidine														0.00054
60	Benzo(a)Anthracene														0.049
61	Benzo(a)Pyrene														0.049
62	Benzo(b)Fluoranthene														0.049
63	Benzo(ghi)Perylene														

Table 1 - Basin Plan Water Quality Objectives and California Toxics Rule (CTR) Water Quality Criteria

		Basin Plan Objectives (ug/L)- Regional Board 2						CTR Water Quality Criteria (ug/L)				
		Freshwater (from Table 3-4)			Saltwater (from Table 3-3)			Freshwater	Saltwater	Human Health		
64	Benzo(k)Fluoranthene											0.049
65	Bis(2-Chloroethoxy)Methane											
66	Bis(2-Chloroethyl)Ether											1.4
67	Bis(2-Chloroisopropyl)Ether											170,000
68	Bis(2-Ethylhexyl)Phthalate											5.9
69	4-Bromophenyl Phenyl Ether											
70	Butylbenzyl Phthalate											5,200
71	2-Chloronaphthalene											4,300
72	4-Chlorophenyl Phenyl Ether											
73	Chrysene											0.049
74	Dibenzo(a,h)Anthracene											0.049
75	1,2-Dichlorobenzene											17,000
76	1,3-Dichlorobenzene											2,600
77	1,4-Dichlorobenzene											2,600
78	3,3-Dichlorobenzidine											0.077
79	Diethyl Phthalate											120,000
80	Dimethyl Phthalate											2,900,000
81	Di-n-Butyl Phthalate											12,000
82	2,4-Dinitrotoluene											9.1
83	2,6-Dinitrotoluene											
84	Di-n-Octyl Phthalate											
85	1,2-Diphenylhydrazine											0.54
86	Fluoranthene											370
87	Fluorene											14,000
88	Hexachlorobenzene											0.00077
89	Hexachlorobutadiene											50
90	Hexachlorocyclopentadiene											17,000
91	Hexachloroethane											8.9
92	Indeno(1,2,3-cd)Pyrene											0.049
93	Isophorone											600
94	Naphthalene											
95	Nitrobenzene											1,900
96	N-Nitrosodimethylamine											8.1
97	N-Nitrosodi-n-Propylamine											1.4
98	N-Nitrosodiphenylamine											16
99	Phenanthrene											
100	Pyrene											11,000
101	1,2,4-Trichlorobenzene											
102	Aldrin							3	1.3			0.00014
103	alpha-BHC											0.013
104	beta-BHC											0.046
105	gamma-BHC							0.95	0.16			0.063
106	delta-BHC											
107	Chlordane (303d listed)							2.4	0.0043	0.09	0.004	0.00059
108	4,4'-DDT (303d listed)							1.1	0.001	0.13	0.001	0.00059
109	4,4'-DDE (linked to DDT)											0.00059
110	4,4'-DDD											0.00084
111	Dieldrin (303d listed)							0.24	0.056	0.71	0.0019	0.00014
112	alpha-Endosulfan							0.22	0.056	0.034	0.0087	240
113	beta-Endosulfan							0.22	0.056	0.034	0.0087	240
114	Endosulfan Sulfate											240
115	Endrin							0.086	0.036	0.037	0.0023	0.81
116	Endrin Aldehyde											0.81
117	Heptachlor							0.52	0.0038	0.053	0.0036	0.00021
118	Heptachlor Epoxide							0.52	0.0038	0.053	0.0036	0.00011
119	Aroclor 1016 (303d listed)								0.014		0.03	0.00017
120	Aroclor 1242 (303d listed)											
121	Aroclor 1254 (303d listed)											
122	Aroclor 1221 (303d listed)											
123	Aroclor 1232 (303d listed)											
124	Aroclor 1248 (303d listed)											
125	Aroclor 1260 (303d listed)											
126	Toxaphene							0.73	0.0002	0.21	0.0002	0.00075
a. The most stringent of salt and fresh water criteria were selected for this analysis.												
b. According to Table 1 of Section (b)(1) of CTR (40CFR 131.38), those criteria should use Basin Plan objectives; criteria for Se and CN are specified by the NTR.												
c. Criteria for copper is taken from CTR. CTR criteria for copper is expressed as dissolved metals. The copper criterion in the table is adjusted by dividing a factor of 0.1 to convert the dissolved to total metal concentration.												
The criteria for Selenium is taken from NTR.												
d. Acronyms in the "Final Result" column: CD: Cannot determine reasonable potential due to the absence of data, or because Minimum DL is greater than water quality objective or CTR criteria												
IM: Interim monitoring is required												
N: No reasonable potential												
Y: Has reasonable potential												
DL: Detection limit above water quality objective or CTR criteria												
Y(B): Reasonable potential due to ambient data exceedances												
E. Refer to the table entitled "Metal Criteria after Adjusting Hardness" for detailed determination of the criteria C in shaded area.												

Table 2
Reasonable Potential Analysis for Metals
Using E-001 Effluent Data

Date	Arsenic 2 ug/L	Cadmium 4 ug/L	Chromium (Total) 5 ug/L	Copper 6 ug/L	Lead 7 ug/L	Mercury 8 ug/L	Nickel 9 ug/L	Silver 11 ug/L	Zinc 13 ug/L	Dieldrin 111 ug/L	DDE 109 ug/L
Jan-99	6.4	< 0.50	< 5.0	10	0.87	< 0.20	< 5.0	< 0.50	23	NA	NA
Feb-99	2	< 0.50	< 5.0	9.5	1.4	< 0.20	< 5.0	< 0.50	18	NA	NA
Mar-99	1.6	< 0.50	< 5.0	3.7	0.3	< 0.20	3.1	< 1.0	6	NA	NA
Apr-99	0.6	< 0.50	3.2	4.1	0.41	0.16	3.2	< 1.0	8	NA	NA
May-99	2.1	< 0.50	7.3	8.2	1.4	< 0.10	7.6	< 1.0	10	NA	NA
Jun-99	2.7	< 0.50	7.5	9.7	1.8	< 0.10	7.7	< 1.0	14	NA	NA
Jul-99	3.9	< 0.50	12	14	2.5	0.15	13	< 1.0	18	NA	NA
Aug-99	1.4	< 0.50	11	5.5	1.4	< 0.10	12	< 1.0	17	NA	NA
Sep-99	1.8	< 0.50	7.7	9.4	1.1	0.11	6.7	< 1.0	13	NA	NA
Oct-99	2.1	< 0.50	5.9	8.2	0.7	< 0.10	7.3	< 1.0	8.3	NA	NA
Nov-99	2.2	< 0.50	14	13	2.4	0.14	13	< 1.0	17	NA	NA
Dec-99	1.5	< 0.50	1.4	6.9	0.59	< 0.10	3.5	< 1.0	6.2	NA	NA
Jan-00	1.4	< 0.50	5.6	7.6	0.69	< 0.20	5.6	< 1.0	6.5	NA	NA
Feb-00	0.46	< 0.50	4.1	8.6	0.87	0.0091	7.8	< 1.0	9.7	NA	NA
Mar-00	< 0.3	< 0.02	< 5.0	6	< 0.3	0.0044	< 5.0	< 0.1	0.031	NA	NA
Apr-00	0.56	< 0.02	4.6	5.2	0.78	0.008	4.6	< 0.1	6	NA	NA
May-00	1.1	< 0.50	5.7	7.5	1	0.011	8	< 1.0	10	NA	NA
Jun-00	2.7	< 0.50	7.2	12	1.5	0.0106	12	< 1.0	15	NA	NA
Jul-00	2.7	< 0.50	< 5.0	5.5	1	0.0114	2.5	< 1.0	5.4	NA	NA
Aug-00	1.7	< 0.50	5.4	9.2	0.8	0.0086	5.6	< 1.0	10	NA	NA
Sep-00	2	< 0.50	1.6	7.3	0.5	0.00594	4.6	< 1.0	5.3	NA	NA
Oct-00	2	< 0.50	4.7	8.6	0.7	0.00736	6.3	< 1.0	6.9	NA	NA
Nov-00	1.3	< 0.50	4.8	9.8	0.5	0.00545	6.1	< 1.0	7.6	NA	NA
Dec-00	3.2	< 0.50	13	19	2.7	0.00607	15	< 1.0	19	NA	NA
Jan-01	1.9	< 0.50	4.5	8	0.79	0.00823	4.8	< 1.0	7.7	NA	NA
Feb-01	2.1	< 0.50	5.4	7	0.79	0.00663	5.2	< 1.0	7.2	NA	NA
Mar-01	4.1	< 0.50	13	16	1.9	NA	17	0.033	21	NA	NA
Apr-01	3.1	< 0.50	3.9	8.1	0.89	0.00980	6.1	< 1.0	8.1	NA	NA
May-01	3	< 0.50	9.1	8.6	1.3	0.0157	7.7	< 1.0	1	NA	NA
Jun-01	2.5	< 0.50	3.7	5.5	0.43	< 0.0001	3.2	< 1.0	5.5	NA	NA
Jul-01	2.2	< 0.50	4.5	9.5	0.75	0.0180	6.9	< 1.0	7.3	NA	NA
Aug-01	2.8	< 0.50	3.8	8.9	0.43	0.0075	5.2	< 1.0	6.6	NA	NA
Sep-01	1.5	< 0.50	7.4	13	0.95	0.0043	9.4	< 1.0	10	NA	NA
Oct-01	2.2	< 0.02	11	16	0.18	0.0435	12	< 0.1	15	NA	NA
Nov-01	3.3	< 0.02	0.46	12	0.61	0.0041	7.3	< 0.1	11	NA	NA
Dec-01	2.7	< 0.02	5.4	10	0.95	0.0046	6.3	< 0.1	11	NA	NA
Mean (ug/L)	2.20	< 0.43	6.22	9.20	1.01	0.06	7.26	0.82	10.31	NA	NA
Standard Deviation	1.15	0.17	3.29	3.41	0.62	0.07	3.53	NA	5.43	NA	NA

Table 2
Reasonable Potential Analysis for Metals
Using E-001 Effluent Data

Date	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Silver	Zinc	Dieldrin	DDE
	2	4	5	6	7	8	9	11	13	111	109
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Coefficient of Variation (CV)											
min (ug/L)	0.52	0.39	0.53	0.37	0.62	1.20	0.49	NA	0.53	NA	NA
max (ug/L)	0.30	< 0.02	0.46	3.700	0.18	0.00	2.50	0.03	0.03	NA	NA
MEC, total (ug/L)	6.4	< 0.5	14	19	2.7	0.16	17	1	23	NA	NA
Background	11	<0.02	14.0	19	2.7	0.160	17	0.033	23	NA	NA
86BP, 1-hr avg	3.65	0	80.37	9.9	2.35	0.038	21.8	0.057	18.2	0.00038	0.00092
86BP, 4-day avg	69	1.88	16	9.57	35	2.400	816		67		
86BP: Inst.Max	36	0.68	11	6.76	1.38	0.025	91		60.9		
86BP: 24hr Avg							140	1.31	170		
CTR, CMC, total (acute / chronic)							7.1	1.2	58		
CTR, CCC, total (acute / chronic)	69	42.3	1100.0	5.8	220.8		74.7	2.2	95.1	0.2	
CTR, Objectives for HH, total (Org only)	36	9.3	50.0	3.1	8.5		8.3		85.6	0.0019	
Reasonable Potential						0.051	4600			0.00014	0.00059
	N	N	Y	Y	Y	Y	Y	N	N	Y	Y

Notes:

- Maximum ambient, background data from 1998 - 2000 was used, taken from RMP Sacramento River Station
- Criteria is for lowest of the freshwater or saltwater, from the 1986 Basin Plan (86BP)
- Criteria is for saltwater, from the California Toxics Rule (CTR)
- Reasonable potential indicators are defined as follows:

N = No reasonable potential
Y = Reasonable potential exists
CD = Cannot determine reasonable potential
DL = Detection limit is above water quality objective
No Obj. = No water quality objective available
NA = Data not available

Table 3

Background Data

Station	Date	Naphthalene ug/L	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Fluorene ug/L	Phenanthrene ug/L	Benz(a)anthracene ug/L	Chrysene ug/L
Sacramento River	03/05/93	0	0	0	0	0	0.00125	0.00004	0.00037
Sacramento River	02/09/94	0	0	0	0	0	0.00056	0.00001	0.00095
Sacramento River	04/28/94	0	0	0	0.00006	0	0.00096	0.00061	0.0009
Sacramento River	08/24/94	0	0	0	0	0	0.00052	0	0.00066
Sacramento River	02/15/95	0	0	0	0	0	0.00039	0	0.00046
Sacramento River	04/18/95	0	0	0	0	0	0.00081	0.00006	0.00021
Sacramento River	08/23/95	0	0	0	0.00005	0	0.00089	0.00038	0.00106
Sacramento River	02/14/96	0.0003	0	0	0.00009	0.00072	0.00148	0.00014	0.00023
Sacramento River	04/23/96	0.0007	0	0.0001	0.00002	0.00047	0.00076	0.00016	0.00022
Sacramento River	07/22/96	0.0028	0	0.00011	0.00004	0.00056	0.0015	0.00074	0.00077
Sacramento River	01/29/97	0.0003	0.00024	0.00012	0	0.00052	0.00146	0.00065	0.00075
Sacramento River	04/23/97	0.0006	0	0	0	0.00044	0.00168	0.00063	0.0006
Sacramento River	08/06/97	0	0	0	0	0.00018	0.00082	0.00072	0.00058
Sacramento River	02/04/98	0	0.005	0	0.0058	0.0021	0.0041	0.00045	0.00061
Sacramento River	04/16/98	0	0	0	0	0	0	0	0.00047
Sacramento River	07/29/98	0	0	0	0	0.0004	0	0	0.00046
Sacramento River	02/10/99	0	0	0	0	0.00023	0	0.0006	0.0003
Sacramento River	04/21/99	0.00019	0	0	0	0	0.001	0	0.0003
Sacramento River	07/21/99	0	0	0	0	0.0004	0	0.0008	0.001
Sacramento River	07/19/00	0	0	0	0	0	0.00104	0.0011	0.0007
	MAX	0.0028	0.005	0.00012	0.0058	0.0021	0.0041	0.0011	0.00106

Table 3

Background Data

Pyrene ug/L	Benzo(a)pyrene ug/L	Benzo(e)pyrene ug/L	Benzo(b)fluoranthene ug/L	Benzo(k)fluoranthene ug/L	Dibenz(a,h)anthracene ug/L	Perylene ug/L	Benzo(ghi)perylene ug/L
0.00122	0	0.00004	0.00019	0.00018	0	0	0
0.00123	0.00006	0	0	0.00027	0	0	0
0.00241	0	0.0012	0.0018	0.00057	0.0002	0	0
0.00122	0	0.00053	0.00088	0.00025	0.00021	0	0.0001
0.00063	0.00007	0.00042	0.00062	0.00018	0	0	0
0.00047	0	0.00016	0.00021	0.00009	0.00003	0	0
0.00172	0	0.00071	0.00109	0.00042	0.00067	0	0
0.00103	0.00003	0.0004	0.00033	0.00093	0	0.00002	0.00003
0.00082	0	0.00015	0.00022	0.00008	0.00002	0	0
0.00202	0.00009	0.0006	0.00069	0.00023	0.0001	0	0
0.00116	0	0	0.00113	0.00031	0.00016	0	0
0.00172	0	0.00058	0.00075	0.0002	0	0	0
0.00154	0	0.00065	0.00094	0.00027	0	0	0
0	0	0.00046	0	0	0	0	0.00062
0	0.00032	0.00035	0.00061	0	0	0	0
0	0	0.00041	0.00057	0	0	0	0
0.0008	0	0.0003	0.0004	0.0001	0	0	0.0001
0.0011	0	0.0003	0.0005	0.0001	0	0	0
0	0	0.0014	0.0019	0.0006	0.0002	0	0
0.00248	0	0.00093	0.0012	0.00035	0	0	0
0.00248	0.00032	0.0014	0.0019	0.00093	0.00067	0.00002	0.00062

Table 3
Background Data
PAH

Fluoranthene	Indeno(1,2,3-cd)pyrene
ug/L	ug/L
0.00123	0.00004
0.00096	0
0.00193	0.0013
0.00105	0.00041
0.00083	0.00014
0.00084	0.00007
0.00096	0.00091
0.00118	0.00017
0.00089	0.00003
0.0022	0.00062
0.00122	0.00075
0.0023	0.00022
0.00176	0.00018
0.0013	0.00051
0	0.00034
0	0
0.0011	0.0002
0.0012	0
0.003	0.001
0.0028	0
0.003	0.0013

Tabel 3
Background Data

Station	Date	Endosulfan I ug/L	Endosulfan II ug/L	Endosulfan Sulfate ug/L	p,p'-DDD ug/L	p,p'-DDE ug/L	p,p'-DDT ug/L	SUM Chlordanes (SFEI) ug/L
Sacramento River	03/05/93	0.00026089	0	0	0.000106	0.000769	0.000052	0.000124
Sacramento River	02/09/94	0	0	0	0.0000521	0.0001919	0.0000104	0.000095
Sacramento River	04/28/94	0	0	0	0.00021	0.000298	0.000027	0.000128
Sacramento River	08/24/94	0	0	0	0.000082	0.000142	0.000034	0.000132
Sacramento River	02/15/95	0	0	0	0.000053	0.000352	0.000006	0.000106
Sacramento River	04/18/95	0	0	0	0.000127	0.000548	0.000011	0.000083
Sacramento River	08/23/95	0	0	0	0.000099	0.00031	0.000009	0.000116
Sacramento River	02/14/96	0	0	0	0.000192	0.00046	0.000016	0.000096
Sacramento River	04/23/96	0	0	0	0	0	0	0
Sacramento River	07/22/96	0.000002	0	0.00012	0.000234	0.000303	0.000027	0.000227
Sacramento River	01/29/97	0	0	0.000179	0.000347	0.00092	0.000349	0.000256
Sacramento River	04/23/97	0	0	0.0002	0.000241	0.00044	0.000057	0.000302
Sacramento River	08/06/97	0	0	0.000146	0.000233	0.000304	0.000014	0.00018
Sacramento River	02/04/98	0	0	0.000007	0	0	0	0.0001
Sacramento River	04/16/98	0	0.000007	0.0000018	0	0.00032	0	0.00012
Sacramento River	07/29/98	0.0000018	0	0.000195	0	0	0.000038	0
Sacramento River	02/10/99	0.000036	0.000016	0.000098	0.000139	0.000203	0.000253	0.000087
Sacramento River	04/21/99	0	0	0.000079	0.000045	0.000237	0.000037	0.000058
Sacramento River	07/21/99	0.000007	0.000042	0.000121	0.000102	0.000147	0.000034	0.000062
Sacramento River	07/19/00	0	0	0	0	0.000256	0	0.00001
	MAX	0.000036	0.000042	0.0002	0.000347	0.00092	0.000349	0.000302

Tabel 3

Background Data

Station	Heptachlor ug/L	Heptachlor Epoxide ug/L	Aldrin ug/L	Dieldrin ug/L	Endrin ug/L	Hexachlorobenzene ug/L
Sacramento River	0	0	0	0.000224	0	0.000053
Sacramento River	0	0.0000147	0	0.000193	0	0.0000151
Sacramento River	0.0000013	0.0000312	0	0.0001795	0	0.000026
Sacramento River	0.000011	0.000034	0	0.0000071	0	0.0000164
Sacramento River	0	0.000054	0	0.00003	0	0.000011
Sacramento River	0	0.000012	0	0.000003	0	0.000032
Sacramento River	0.000002	0.000018	0	0.000169	0	0.000003
Sacramento River	0	0.000022	0	0	0	0.000012
Sacramento River	0	0	0	0	0	0
Sacramento River	0	0.000045	0	0.000065	0	0.000041
Sacramento River	0.000007	0.000029	0	0.000275	0	0.000029
Sacramento River	0	0.000097	0	0.00032	0	0.0000211
Sacramento River	0	0.000017	0	0.00038	0	0.0000176
Sacramento River	0	0.000013	0	0.0002	0	0
Sacramento River	0	0	0	0.000002	0	0
Sacramento River	0	0	0	0.00016	0	0
Sacramento River	0	0.000013	0	0.000089	0.000019	0
Sacramento River	0	0.000007	0	0.000061	0	0.000015
Sacramento River	0	0.0000015	0	0.000053	0.0000037	0.00002
Sacramento River	0	0	0	0	0	0
	0.000011	0.000097	0	0.00038	0.000019	0.000053

Table 3
Background Data for RPA

Station	Date	Ag* µg/L	As µg/L	Cd* µg/L	Cr µg/L	Cu* µg/L	Hg µg/L	Ni* µg/L	Pb* µg/L	Se µg/L	Zn* µg/L
Sacramento River	3/5/93	0.0074	1.68	0.0212	8.4	5.23	0.0103	6.66	0.92	0.197	8.4
Sacramento River	5/27/93	0.0566	1.37	0.0309	3.68	3.35	0.006	3.2	0.53	0.153	5
Sacramento River	9/16/93	0.009	2.02	0.0263	4.44	3.74	0.01	3.45	0.69	0.241	8.43
Sacramento River	2/9/94		1.89	0.0224	1.44		0.005	2.52	0.44	0.3	3.74
Sacramento River	4/28/94	0.0155	2.18	0.0442	7.01	5.82	0.0126	5.75	1.51	0.25	11.49
Sacramento River	8/24/94	0.003	2.65	0.0376	2.36	3.44	0.0045	2.85	0.45	0.16	2.75
Sacramento River	2/15/95	0.0068	1.78	0.025	6.62	4.68	0.0066	6.35	0.62	0.14	7.46
Sacramento River	4/18/95	0.0075	1.35	0.025	5.79	4.3	0.0088	4.94	0.8	0.11	5.67
Sacramento River	8/23/95	0.007	1.94	0.02	2.7	2.62	0.0048	2.7	0.5		3.36
Sacramento River	2/14/96	0.006	1.77	0.03	8.2	3.9	0.006	7.6	0.7	0.16	7.4
Sacramento River	4/23/96	0.002	1.21	0.02	4	2.2	0.003	2.5	0.3	0.07	2.6
Sacramento River	7/22/96	0.003	2.08	0.02	5.2	3.3	0.007	3.9	1.2	0.11	5.1
Sacramento River	1/29/97		3.65	0.06	26.13	9.9	0.0377	21.8	2.35	0.14	18.2
Sacramento River	4/23/97		2.07	0.03	3.99	3.4	0.0074	4.6	0.51	0.18	6.1
Sacramento River	8/6/97		2.3	0.03	5.21	2.2	0.0056	4.2	0.65	0.08	4.9
Sacramento River	2/4/98	0.019	3.35	0.05	19.77	6.7	0.0189	11.8	1.75	0.18	16.1
Sacramento River	4/16/98	0.007		0.02	4.91	3.2	0.0006	3.7	0.42	ND	4.8
Sacramento River	7/29/98	0.003	2.31	0.03	4.71	2.8	0.0052	2.9	0.5	0.16	4.6
Sacramento River	2/10/99	0.007	1.25		3.19	2.9		5.3	0.52	0.09	3.1
Sacramento River	4/21/99	0.008	1.48		80.37	3.1	0.0035	3.7	0.36	0.1	3.8
Sacramento River	7/21/99	0.006	2.2		6.04	3.8		5.1	0.87	0.1	5.8
Sacramento River	2/9/00		1.55								
Sacramento River	7/19/00		1.91							0.104	
	MAX	0.0566	3.65	0.06	80.37	9.9	0.0377	21.8	2.35	0.3	18.2

Table 4
Effluent Limit Calculation

Constituent	Chromium (µg/l)
Acute Aquatic Life Water Quality Objective (C)	3.9
Chronic Aquatic Life Water Quality Objective (C)	1.1
Human Health Water Quality Objective (C)	
Dilution Credit (D)	0
Ambient Background Concentration (B)	
Acute Aquatic Life Effluent Concentration Allowance (ECA)	3.9
Chronic Aquatic Life Effluent Concentration Allowance (ECA)	1.1
Human Health Effluent Concentration Allowance (ECA)	NA
Coefficient of Variation (CV)	0.53
(s)	0.49755699
(s) _d	0.26051662
Z	2.326
Acute Multiplier	0.35574679
Chronic Multiplier	0.56438017
Long Term Average (Acute)	1.38741247
Long Term Average (Chronic)	0.62081819
Lowest LTAs	0.62081819
n	4
(s) _n	0.26051662
Z(AMEL)	1.645
AMEL Multiplier	1.48381337
MDEL Multiplier	2.81098815
AMEL _(aquatic life)	0.9
MDEL _(aquatic life)	1.7
AMEL _(human health)	NA
MDEL/AMEL Multiplier	1.89443511
MDEL _(human health)	NA

Constituent	Chromium (µg/l)
94 Order Limits. Daily Max:	No Limit
Calculated QBEL (lower of human health or aquatic life)	
MDEL	1.7
AMEL	0.9
Performance (max observed conc. Or lowest detection limit if not detected) November 98 to November 01 (MEC)	14
Lowest ML from SIP	0.5
• Is MEC>AMEL?	Yes
• If all data below DL	No
is lowest DL>ML?	
Ability to Comply	no
w/ calculated QBEL	
Calculated Interim Limit	16

Table 5
Interim Limit Calculation

Date/Parameter	Copper	Log Copper	Lead	Log Lead
Jan-99	10	2.30258509	0.87	-0.139262
Feb-99	9.5	2.2512918	1.4	0.336472
Mar-99	3.7	1.30833282	0.3	-1.203973
Apr-99	4.1	1.41098697	0.41	-0.891598
May-99	8.2	2.10413415	1.4	0.336472
Jun-99	9.7	2.27212589	1.8	0.587787
Jul-99	14	2.63905733	2.5	0.916291
Aug-99	5.5	1.70474809	1.4	0.336472
Sep-99	9.4	2.24070969	1.1	0.09531
Oct-99	8.2	2.10413415	0.7	-0.356675
Nov-99	13	2.56494936	2.4	0.875469
Dec-99	6.9	1.93152141	0.59	-0.527633
Jan-00	7.6	2.02814825	0.69	-0.371064
Feb-00	8.6	2.1517622	0.87	-0.139262
Mar-00	0.006	-5.1159958	0.3	-1.203973
Apr-00	5.2	1.64865863	0.78	-0.248461
May-00	7.5	2.01490302	1	0
Jun-00	12	2.48490665	1.5	0.405465
Jul-00	5.5	1.70474809	1	0
Aug-00	9.2	2.21920348	0.8	-0.223144
Sep-00	7.3	1.98787435	0.5	-0.693147
Oct-00	8.6	2.1517622	0.7	-0.356675
Nov-00	9.8	2.28238239	0.5	-0.693147
Dec-00	19	2.94443898	2.7	0.993252
Jan-01	8	2.07944154	0.79	-0.235722
Feb-01	7	1.94591015	0.79	-0.235722
Mar-01	16	2.77258872	1.9	0.641854
Apr-01	8.1	2.09186406	0.89	-0.116534
May-01	8.6	2.1517622	1.3	0.262364
Jun-01	5.5	1.70474809	0.43	-0.84397
Jul-01	9.5	2.2512918	0.75	-0.287682
Aug-01	8.9	2.18605128	0.43	-0.84397
Sep-01	13.0	2.56494936	0.95	-0.051293
Oct-01	16	2.77258872	0.18	-1.714798
Nov-01	12	2.48490665	0.61	-0.494296
Dec-01	10	2.30258509	0.95	-0.051293
Descriptive Statistics* and Water-Quality Objectives				
Number of Measurements	36	36	36	36
Number of Detections	36	36	36	36
Mean	9.03	1.96	1.01	-0.17
Median (50th Percentile)	8.60	2.15	0.84	-0.18
75th Percentile	10.00	2.30	1.33	0.28
Geometric Mean	7.12	#NUM!	0.84	#NUM!
Skewness	0.44	-5.24	1.29	-0.21
Trimmed Mean (80%)	8.88	2.15	0.93	-0.16
Standard Deviation	3.70	1.27	0.62	0.61
Average + 3SD	20.141351			5.316426
MEC	19		2.7	

* Based on the Skew number, copper is normally behaved. Therefore, the interim limit is 20 µg/L.

* Based on the Skew number, lead is lognormally behaved. Therefore, the interim limit is 5.3 mg/L.

Table 5
Interim Limit Calculation

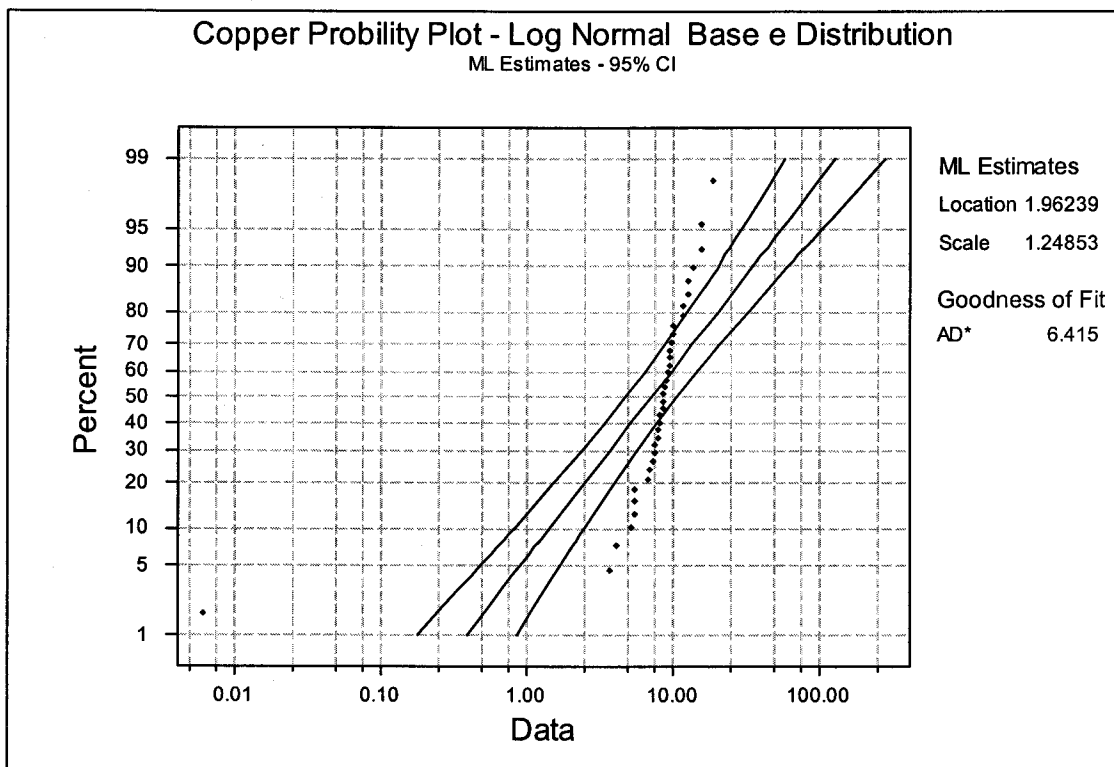
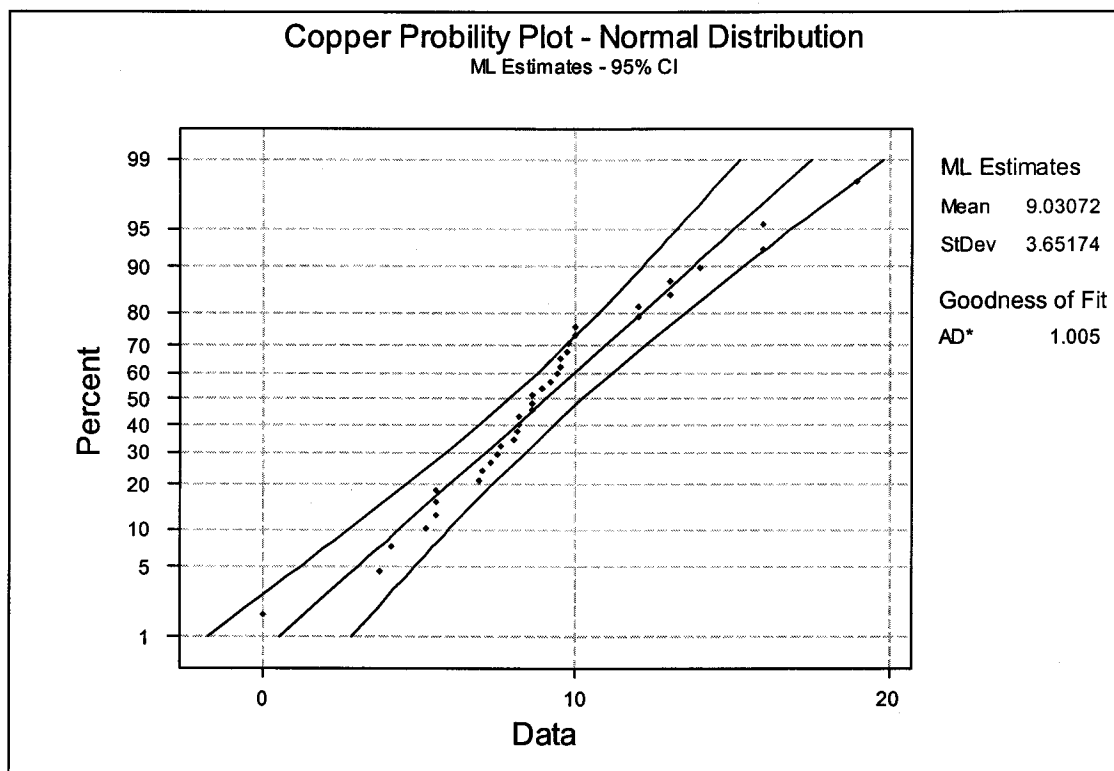


Table 5
Interim Limit Calculation

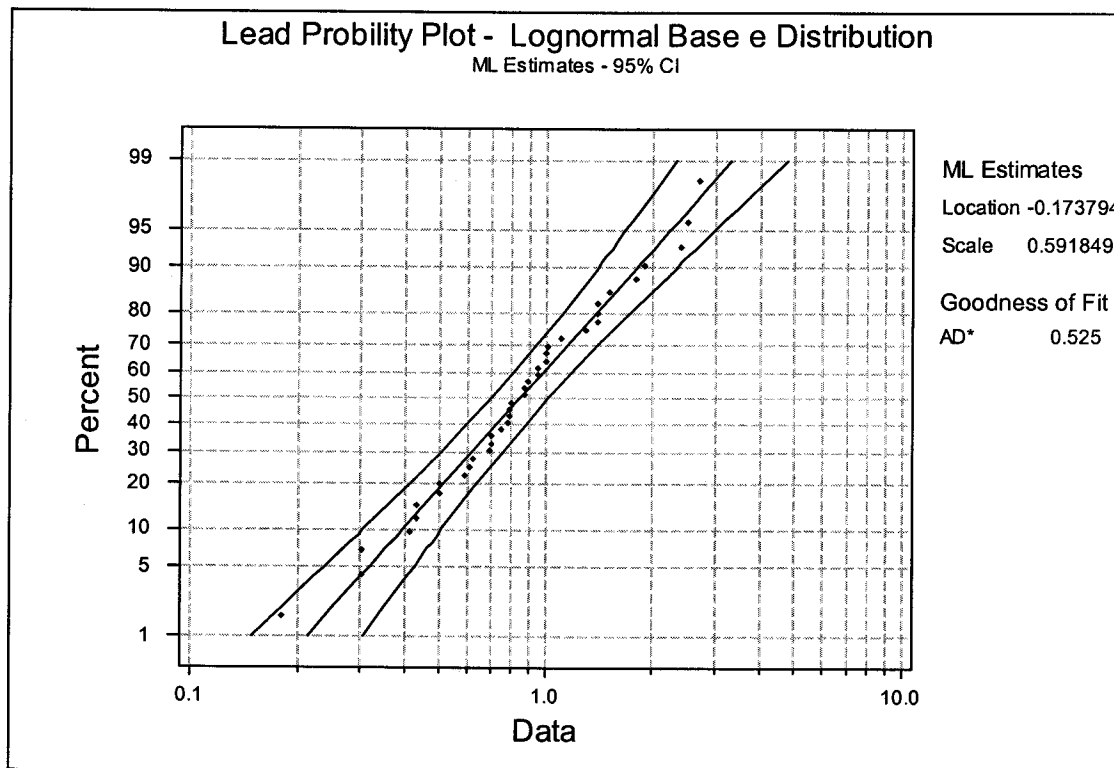
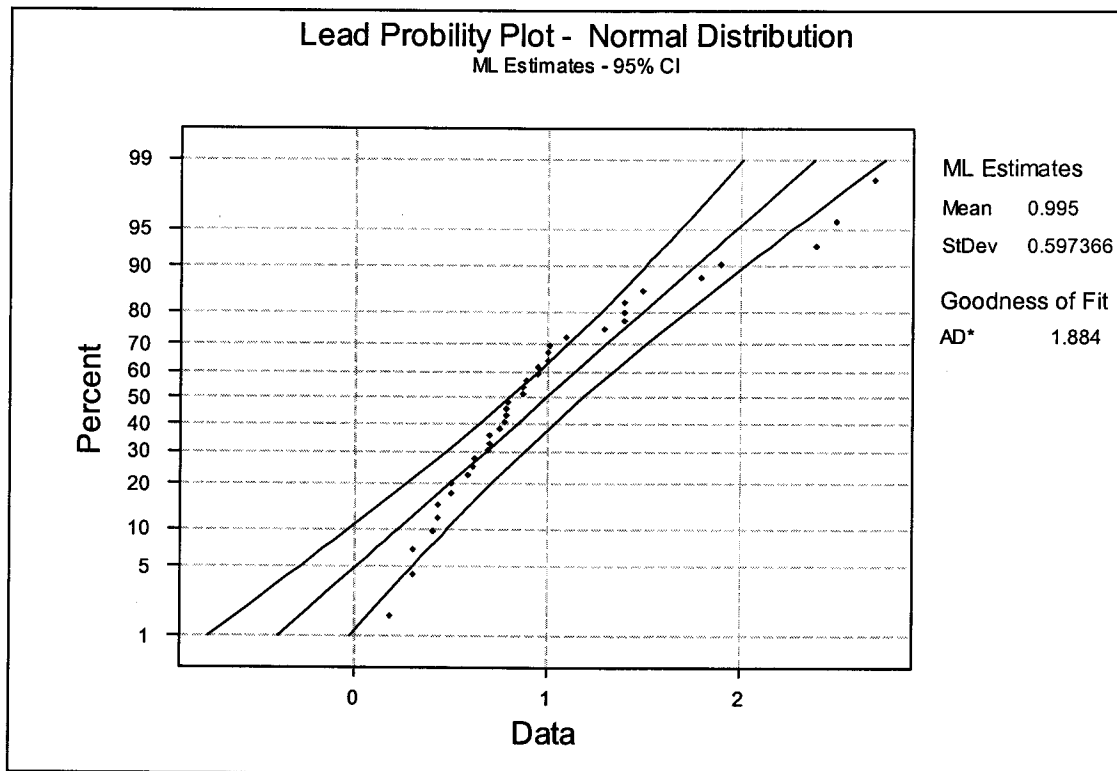


Table 6
Mercury Mass Limit Calculation

Date	Effluent Monthly Average mgd	Mercury Monthly Average ug/L	Mercury Monthly Loading kg/month	12 Month Monthly Moving Average kg/month
January-99	582.0	0.20	13.39764	
February-99	365.4	0.20	8.411508	
March-99	382.1	0.20	8.795942	
April-99	496.6	0.16	9.1453856	
May-99	114.8	0.10	1.321348	
June-99	227.1	0.10	2.613921	
July-99	484	0.15	8.35626	
August-99	588.7	0.10	6.775937	
September-99	568.3	0.11	7.1952463	
October-99	703.7	0.10	8.099587	
November-99	340.2	0.14	5.481678245	
December-99	585.1	0.10	6.734501	
January-00	453.17	0.20	10.43186041	7.194079512
February-00	728.6	0.0091	0.763142926	6.946931213
March-00	277.2	0.0044	0.140385168	6.309567457
April-00	345.7	0.008	0.31832056	5.588271054
May-00	315.0	0.011	0.3988215	4.852682301
June-00	673.3	0.0106	0.821466398	4.775805092
July-00	823.9	0.0114	1.081054119	4.626433876
August-00	1028.7	0.0086	1.018268982	4.020166719
September-00	927.1	0.00594	0.633852707	3.540361051
October-00	922.8	0.00736	0.781737101	2.993578251
November-00	581.9	0.00545	0.365022961	2.383757426
December-00	519.6	0.00607	0.363022177	1.957369486
January-01	451.8	0.00823	0.427977941	1.426412917
February-01	728.6	0.00663	0.556004132	0.592756045
April-01	345.7	0.00980	0.389942686	0.575494479
May-01	315	0.0157	0.56922705	0.596290939
June-01	673.3	0.0001	0.007749683	0.617199813
July-01	823.9	0.0180	1.70695602	0.584610495
August-01	1028.7	0.0075	0.888025275	0.658401297
September-01	927.1	0.0043	0.458849603	0.64231556
October-01	922.8	0.0435	4.62032118	0.595697278
November-01	581.9	0.0041	0.274604429	0.927902984
December-01	519.6	0.0046		
Mean (ug/L)	581.5237844	0.060758235	3.333693152	2.836640238
Standard Deviation	239.8686338	0.071309894	3.855897445	2.33828961
min (ug/L)	114.8	0.0001	0.007749683	0.575494479
max (ug/L)	1028.7	0.2	13.39764	7.194079512
Average + 3SD	1301.129686	0.274687918	14.90138549	9.851509068
Skew	0.205377622	0.926454845	1.017630152	0.569437218